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NOTE ON NECTANDRA PUCHURY MAJOR AND MINOR, AS THE
SOURCE OF PICHURIM OIL AND PICHURIM BARK AND BEAN
OF COMMERCE.

BY J. CARSON, M. D. &c.

In the January number, 1851, of this Journal, is a paper entitled "On an Oleo Resin from Venezuela, by Wm. Procter, Jr.," giving an account of a peculiar product having characteristics as thus designated, and derived from South America. Within a few months, a specimen of the same fluid has been presented to me by Mr. Dulles, of the firm of Dulles, Earle & Cope, druggists, of this city, with specimens of the bark and fruit of the tree from which it is derived. Simultaneously with the reception of these specimens, I received through the kindness of Dr. Ruschenberger, U. S. N., the fruit of a tree inhabiting Brazil, labelled *Pichurim nuts*, and which have been determined to belong to the plant at first known as the *Laurus Pichurim*, but now placed in the genus at the head of this note. The fruit derived from both sources is the same, differing only in size. With this clue to the origin of the oily product described by Mr. Procter, it will be interesting to trace its Natural History, which will be done at some length in the present communication.

In the paper by Mr. Procter it is inquired, is this fluid identical with the "oil of laurel," or is it an analogous product? I am inclined to believe that it is the article referred to by Pereira under that name, for reasons to be given when speaking of the oil.

NECTANDRA *Puchury-Major*, Nees, Laurin. *Laurus Pichurim*, Richard, pere. *Ocotea Pichurim*, Kunth. *O. Puchury Major*, Martius. Nat. Ord. *Lauraceæ*.

GEN. CHAR.—Hermaphrodite. *Calyx*, 6-parted, rotate; segments deciduous, the three outer rather the broadest. *Anthers* 9, ovate nearly sessile, with four cells arranged in a curve, and distinct from the tip of the anther; cells of the interior anthers inverted. *Glands* in pairs, globose, sessile, at the base of the three interior stamens, next their back. *Sterile stamens* either tooth-shaped and biglandular at the base or eglandular, and then with a small oval head. *Fruit* succulent, more or less immersed in the tube of the calyx, changed into a truncated cap. *Flowers* paniced or corymbose, axillary, lax, pretty ample. Lindley.

Sp. Char.—Leaves oblong or elliptical, tapering to a narrow point, between papery and leathery, smooth, reticulated, of the same color on both sides. Peduncles axillary, short. Cup of the fruit very large and spongy.

This plant is described as being but little known to botanists, and we should think it probable, when Hancock is in doubt with regard to it, and Dr. Stenhouse supposed it to be a pine. Its history, however, has been clearly elucidated by Nees, in his *Laurineæ*. It is an inhabitant of Brazil, and probably other parts of South America, the localities referred to being Guiana, Paraguay and Venezuela, where either it or the next species may be found. The woods of Tabatinga, in the province of Rio Negro, are specified as producing it. The fruit in the early months of the year drop from these cups to the ground, when they are collected by the natives, cleaned of their flesh and pericarp and dried by a gentle heat.

N. Puchury minor, Nees. This species bears the smaller fruit. *Cotyledons of the Fruit*, *Pichurim Bean*, *Para Nut*, (*Sassafras Nuts*, Humboldt?)

The *Fruit* contains two cotyledons or lobes, which are convex on one side, flat or curved (from drying) on the other, of a deep brown color, probably reddish when fresh, having a strong aromatic odor, and a warm pungent taste. The substance is at first soft and greasy, but becoming hard from drying. With time, an efflorescence is formed upon the surfaces, supposed to be the solid matter of the essential oil contained in them. There are

two varieties of these lobes; the larger, derived from Brazil, are one and a half inches in length, and over half an inch in breadth, tapering at the extremities so as to present an elliptical form; the smaller are derived from Venezuela, and are scarcely an inch in length and two-eighths of an inch in breadth, of the same form but a little more tapering at the apex. It was at one time supposed that both these cotyledons belonged to the same species, and that the disparity in size depended upon difference in maturity; they, however, as has been shown, belong to different varieties of the plant, if not species.

This fruit has been analyzed by M. Bonastre, and found to contain in 500 parts, 15 of concrete volatile oil, 50 of greasy buty-raceous oil, 110 of stearine, 15 of resin, 40 of brown coloring matter, 55 of fecula, 60 of soluble gum, 100 of parenchyma, with a little acid and uncrystallizable sugar.—*Journ. de Pharm.* xi. p. 1.

Bark.—The sample in my possession is in flat pieces of various sizes, from broken up fragments to half a foot in length and three to four inches in breadth; in thickness, three or four lines. It is of a deep brown color, fibrous and brittle, possessed of the strong aromatic odor of the oil and a warm, biting taste. Where the epidermis is found upon the pieces, it is brown, furrowed or lichenoid.

Oil.—This answers to the description so well given by Mr. Procter in the paper referred to. My specimen is of a lighter color, which may be attributed to age, his sample having become somewhat resinified. The sp. gr. no doubt varies from the same change. I have stated that I had no doubt the above oil is the same described by Pereira as the "*Native Oil of Laurel.*" The latter is said to be "imported from Demerara, obtained by incision in the bark of a large tree, called by the Spaniards *Azcite de Sassafras*, growing in the vast forests between the Oranoco and the Parina." The label on the bottle in the possession of Mr. Procter recommends the "*Azcite de Sassafras.*" The description given of the oil by Pereira would apply to the article under consideration, and coming as they do from the countries which afford the plants treated of, and which have a wide spread habitat, we may reasonably conclude they are identical.*

*It is stated by the latter eminent pharmacologist that the oil is isomeric with the oil of turpentine.

In conclusion, it may be remarked that the bark has been used and recommended in South America as a febrifuge and aromatic tonic, and the nut is used as a substitute for the nutmeg. In fact, Lt. Herndon, in his "Exploration of the Valley of the Amazon," has given it as an article of commerce exported from the town of Barra on the Rio Negro, under the name of Puxiri, or Brazilian Nutmeg, an appellation found to apply in Rio de Janeiro by Dr. Ruschenberger. The oil may be found useful in rheumatism and in diseases requiring an aromatic stimulant.

EXAMINATION OF THE PREPARATIONS MADE BY THE
AMERICAN CHEMICAL INSTITUTE, NEW YORK.

By E. S. WAYNE, Cincinnati.

An association styled the American Chemical Institute, has recently been established in the city of New York, ostensibly for the purpose of manufacturing the concentrated remedies (resinoids and oleo-resins) so extensively used at present by the physicians of the Eclectic school, in their purity, and in a scientific manner.

This institution has produced an extensive list of the above mentioned remedies, differing in their appearance from those of any other manufacturer, and the process by which the chemists of this Institution have produced them, has not yet been made public.

They have also published a work entitled, "Positive Medical Agents, being a treatise on the New Alkaloid, Resinoid and Concentrated Preparations of Indigenous and Foreign Medicinal Plants," which treats of the therapeutic value of the above mentioned remedies, and contains clinic reports, showing the success which has attended their administration at their hands, and recommending to the profession the use of the remedies made by them as the most reliable of the kind, giving as reasons for this preference, that the most scientific methods are used in their extraction, and none but the most scientific chemists and pharmacutists engaged in their manufacture.

These preparations are so entirely different in their appearance, taste and odor from preparations of the same name, and from similar substances, made by others, that no little curiosity

has been excited in regard to their mode of manufacture ; and to throw some light upon the process, I have, at the request of Dr. Cleveland, made an examination of a sufficient number of them to judge *à priori* of the entire list produced at this institution.

The specimens examined I obtained from Dr. Cleveland, who procured them *direct from their establishment, and each specimen had upon it their label.* I also obtained specimens of their make from others ; they were all alike in appearance, and upon analysis gave the same results ; and all of them were, without any doubt, the products of the American Chemical Institute, of New York.

Analysis.

The first one of their preparations I submitted to analysis was Hyoscyamin ; it is said to be a resinoid in the work above mentioned ; it is of a dark green color, resembling chrome green in appearance, and possesses the peculiar narcotic odor of hyoscyamus ; the dose of it is said to be from one-twelfth to one-sixteenth of a grain. Twenty-five grains of this green powder were placed in a beaker glass, upon which one ounce of alcohol was poured, and the whole boiled for a few minutes. Upon removing from the sand bath, and allowing to stand to cool, I found that but a small portion had been taken up by the solvent ; it had become of a dark green color. The insoluble portion was separated upon a filter, and washed with hot alcohol as long as it took up any coloring matter. The insoluble matter upon the filter still retained a portion of coloring matter, it was of a pale green color. This was dried upon the filter, detached from it and weighed ; the weight of it was 21.25 grains ; it was insoluble in water ; upon the addition of sulphuric acid it readily dissolves without the application of heat, with the disengagement of carbonic acid gas, and a precipitation of the remaining trace of coloring matter which was separated from the solution by filtering it. A portion of the solution in a test tube was treated with phosphate of soda ; no change was produced in the solution. The addition of a few drops of aqua ammonia caused an immediate white, bulky precipitate, indicating the presence of magnesia. The deep green filtrate obtained by treating the hyoscyamin with alcohol, was evaporated to get rid of the alcohol, a small quantity

of water having been previously added to it; the loss of alcohol caused a separation of a dark green fatty substance, chlorophyl. A few drops of dilute sulphuric acid were now added to it, and boiled and filtered to separate the insoluble green matter, and (having detected one fraud, suspected another) examined it for the presence of morphia, without obtaining any indication of its being present.

The analysis of this substance proves it to be, not as it is represented, a resinous product, obtained from the *Hyoscyamus niger*, but to be carbonate of magnesia, upon which tincture of hyoscyamus has been poured, the alcohol evaporated, and the resulting mass reduced to a powder, the bright green color of which is due to the chlorophyl taken up from the leaves by the alcohol. It contains little or no resin, the fatty greenish substance chlorophyl alone being separated upon the evaporation of the tincture obtained in the first experiment.

Hydrastin.—This substance is in the form of a powder, of a yellow color, and like the former is said to be a resin, obtained from the *Hydrastis Canadensis*. It was treated like the hyoscyamin, and found to contain 20.25 grains of carbonate of magnesia out of 25 grains used in the experiment. The alcoholic tincture obtained was evaporated so as to expel the greater portion of the alcohol, a small portion of resin separated, which was removed by filtration; to the filtrate a few drops of hydrochloric acid was added, which precipitated in crystalline form the hydrastine, which was dried, and weighed 1.25 grains.

This resinoid, like the former, the analysis proves to be nothing more than carbonate of magnesia, upon which tincture of hydrastis has been poured, the alcohol allowed to evaporate, and the mass then powdered.

Gelsemin.—Said to be the resinoid of the *Gelsemium semper-virens*. It was treated as the two former substances, and proved to be like them, carbonate of magnesia, upon which a tincture had been poured. I presume it must have been the tincture gelseminum, because the tincture obtained by digesting the powder in alcohol, exhibits the same peculiar bluish tint by reflected light, observed in the tincture of the root of that plant. The weight of carb. magnesia obtained from 25 grains was 21.25 grains.

Ten other resinoids I have examined, and with the same comparative results, the only difference being a slight variation in the amount of carb. magnesia found. I have examined in all eighteen specimens of the products of the American Chemical Institute, called resinoids and alkaloids, and have found but four specimens to be as represented, namely, jalapin, which is the true resin of jalap, powdered; podophyllin, the resin of the *Podophyllum peltatum*; sanguinarin, from the *Sanguinaria Canadensis*; and hydrastine, a crystallizable principle obtained from the *Hydrastis Canadensis*. As they prepare it, it is of a dark yellow color, and in the form of a powder. I found it to be perfectly soluble in hot alcohol, from which it crystallized in stellated groups upon cooling. This substance they claim to be an alkaloid, but it is really an indifferent body, without either alkaline or acid properties, in that respect similar to piperin and salicin.

The result of my analysis of their preparations is so much at variance with the high tone which this Association assume, and their boast of superior chemical and pharmaceutical lore, that I deemed it, in justice to them, to be positive that the preparations I examined were as represented, true specimens of their manufacture; and also, that the plea of their not being genuine could not be set up against my analysis of them, or maintained, if perchance it should be.

And it must be evident, from my examination of them, that the work previously mentioned is intended as an advertisement, to extend the sale of these products; and as it is plausibly written, and assumes an air of great sincerity, it is very apt to blind with many the true object in view. It is written also with another object; to lull suspicion, and prevent, if possible, an investigation of the true nature and composition of the remedies they manufacture.

Cincinnati, June 8, 1855.

ON OINTMENT AND EXTRACT OF STRAMONIUM.

By A. P. SHARP, Baltimore.

In the U. S. Pharmacopœia for 1850, the formula for the preparation of stramonium ointment was changed from the

method by infusion, to that of a mechanical mixture of the extract with lard, so that the resulting preparation varies in color and consistence with the form of extract used. When the extract of the Pharmacopœia is employed, the color is brown; when the extracts containing chlorophylle and albumen are used, the color has various shades of a dull green. As some may continue to prepare it in the old way, I will give the following method, which I have adopted for some years, and which affords an excellent result.

Take of Fresh Stramonium leaves,	a pound.
Lard,	three pounds.
Yellow wax,	half a pound.

Put three ounces of the stramonium leaves bruised with half a pint of alcohol of 88 per cent., mix them with the hand, and when the coloring matter has been dissolved express the tincture, add the dregs and the remaining leaves bruised to the lard, and heat them until they become crisp, avoiding too high a temperature. The exhausted leaves are then separated by a cloth and strongly expressed; the wax is then incorporated by heat, and the tincture added, continuing the heat until the alcohol is driven off and the chlorophylle, &c. remains dissolved in the fatty matter, to which it gives a fine green color. Made in this way the ointment is not prone to rancidity, and may be kept for two years perfectly sweet and green.

In preparing the extract I pursue an analogous plan. A portion (one fourth) of the bruised leaves is mixed with strong alcohol, and after standing several days is expressed. The remainder of the leaves mixed with sufficient diluted alcohol (1 to 4 of water) to cover them are allowed to stand several days and expressed. The alcoholic juice is now evaporated by a water bath, and when nearly of the proper consistence the first made green tincture is added and evaporated. The extract now has a fine green color, and when used for making the ointment by the present officinal process it affords a preparation of a bright green color, especially if a little alcohol is mixed with the extract before adding the lard.

In preparing the extracts of aconite, belladonna and hyoscyamus, I pursue the same plan, using the finest imported dried leaves and a larger quantity of diluted alcohol. These extracts

keep well, owing to the absence of albumen, and are, with the exception of their fine green color, equivalents of the alcoholic narcotic extracts of the Pharmacopœia.

In the preparation of the extracts of rhubarb and gentian I have found a decided advantage from treating the roots in pieces of the size of shell-barks, digesting in weak alcohol for some days, expressing, filtering, and evaporating. Too much care cannot be given by the apothecary to the quality of all these preparations, and when able he should make them himself. I once heard a druggist say that he had obtained as much extract of hyoscyamus as he had taken of herb, and he seemed to think it a wonderful feat. He boiled the leaves in water for half a day, transferred them to a coarse bag or cork sack, and expressed them forcibly, so that much vegetable pulp was separated with the decoction and remained in the extract.*

Baltimore, July, 1855.

CONVERSION OF CANE SUGAR INTO GRAPE SUGAR, OBSERVED IN THE SYRUP OF IODIDE OF IRON AND SYRUP OF PROTO NITRATE OF IRON.

By E. S. WAYNE.

My attention was attracted, recently, by a singular change which had taken place in a portion of syrup of iodide of iron made by myself, (in accordance with the formula of the U. S. P.) I had made in all about twenty pounds of the syrup, which, for convenience and protection, was put up in glass stoppered bottles, containing each one pound; these were wrapped in paper and placed in a cool location. A few months after it was made, I accidentally removed the wrapper from one of the remaining bottles, and, to my surprise, found that nearly the whole of its contents were in a semi-solid condition, only about half an inch of fluid remaining, and resting upon the solid portion. I then examined the remaining bottles of syrup, and to my astonishment, found that they had undergone no corresponding change.

From the appearance of the solid contents of the bottle thus

[* NOTE.--Eugene Dupuy (vol. 24, page 219, July 1852,) gives a formula analogous to the above in using alcohol, but directs the leaves to be dry and treated in powder with the alcohol.—EDITOR AM. JOUR. PHARM.]

changed, it not presenting any distinct crystalline form, but granular in appearance, I suspected a modification of the sugar into grape sugar had taken place; and with the view of ascertaining if such was the case, I removed a portion of the mass from the bottle, and pressed it in a cloth to remove as much as possible the fluid portion. The mass left I dissolved in water, and to the solution added sesquicarbonate of ammonia to remove the iron. The precipitate was removed by filtration, to the filtrate Donaldson's test was added, and the whole heated to ebullition. A precipitate of the red suboxide of copper was immediately produced, indicating the presence of grape sugar. The appearance of the mass, and the above reaction of the test applied, was so conclusive to me of the presence of grape sugar, that I deemed any farther test unnecessary. This change of ordinary cane sugar into grape sugar in the syrup of iodide of iron is to me inexplicable. Professor Procter, to whom I mentioned the fact, suggests the presence of free hydriodic acid in the syrup, as the cause of the alteration. There certainly was not any free acid in the original syrup; if so, why not the whole of it undergo the same change? it was all made at the same time and equally protected from the air. The fluid floating upon the solid mass was of a darker color than the original preparation; free hydriodic acid might have been present in it; I did not examine it for it.

Since I have observed this change in the above preparation, Dr. Chapman, of this city, to whom I mentioned it, stated that he had observed a similar phenomenon to occur in the syrup of proto-nitrate of iron, a quantity of which he had carefully prepared some time since, and put up in phials holding two ounces each. Some of the bottles of syrup commenced to deposit a granular substance; others evinced no disposition to change.

One of the bottles of syrup thus changed was given me for examination, which I tested in the same manner as the syrup of iodide of iron, and with like results. The presence of free acid in this last preparation might, in fact, be the cause; but the singularity of the change taking place in a portion only of it, as in the former, I think requires some other explanation.

In the July number of the London Pharmaceutical Journal, I find mention of a curious fact discovered by E. Maumene, which, perhaps, explains the reaction in these two preparations. He

has found that a solution of cane sugar kept for some time, experiences the same conversion into uncrystallizable sugar as when heated with acids. The sugar in these two preparations was exactly in a condition to undergo this change in solution, and had been kept for some time, and at the commencement no free acid was present, but by the metamorphosis free acid was probably generated and accelerated the change. To obviate this difficulty in the above and like preparations, I would suggest the propriety of using grape sugar as a protective agent; it could be easily made from starch, and would be as economical, and not change or deposit by the action of acids as cane sugar will.

Cincinnati, August, 1855.

EXAMINATION OF THE SULPHATE OF QUINIA OF MESSRS.
POWERS & WEIGHTMAN, OF PHILADELPHIA.

BY EDWARD R. SQUIBB, M. D., U. S. NAVY.

Assistant Director U. S. Naval Laboratory, New York.

MR. WM. PROCTER, JR.

Dear Sir:—In the last number of the Journal there appears by the side of my paper on citrate of iron and quinia, a note to you from Messrs. Powers & Weightman, characterizing a part, at least, of that paper as inaccurate. Now my remarks upon their sulphate of quinia did not pretend to more than the accuracy of ordinary practical pharmacy; and the aim was to attain constancy and certainty in connection with the subject of the paper, and to forestall any inferences as to whose sulphate of quinia it was that gave so short a yield. The amount (10 per cent.) of uncombined water stated to be in this sulphate, I now know to be technically incorrect. But it was judged of by the loss in partially efflorescing at 212° , in comparison with the statements of the majority of authorities at hand, and by an inference of its purity. This latter inference was also both technically and practically incorrect.

The pecuniary sensibilities of the manufacturers appear to have led them to receive these remarks upon their preparation as a critical analysis, and they contradict the results, and substitute for them others, which, as chemical analyses, to establish the

chemical perfection of the salt, are even less accurate than the statements they propose to correct.

In view of this unqualified contradiction of my remarks, I have been obliged, reluctantly, to take the time and trouble of another more accurate examination of the sulphate of quinia in question, in order that the character or business of the manufacturers may not suffer through any looseness of expression or inaccuracy of mine; and in order to repel the charge in the sense in which it appears to have been made.

I therefore beg the favor of an insertion of the following paper in the Journal; and that you will send a proof impression of it, at your earliest convenience, to Messrs. Powers & Weightman.

Very respectfully, your obed't. serv't,

E. R. SQUIBB.

This series of experiments embraces the examination of fifteen bottles of this commercial sulphate of quinia, taken without selection from a shelf upon which some forty or fifty bottles still remain.

Experiment No. 1.

The contents of 14 bottles gave an average or mean weight of 434.531 grains each, or .678 per cent. short of the avoirdupois ounce. From the looseness of some of the corks, and from having noticed that 8 bottles in standing over night with the tin foil cover and some of the wax removed, but with the corks undisturbed, very sensibly lost weight, it is probable that these bottles contained an average avoirdupois ounce when put up, and that this deficiency is a loss of water by evaporation. They are, therefore, assumed to have contained an average of 437.5 grains, and this is taken as the basis of all the calculations.

The weather during the first three days of the following observations was clear and very warm. Afterwards cooler, and generally rainy or very damp.

After 24 hours exposure to ordinary summer air, and temperatures from 76° to 92°, the fourteen ounces were found to have suffered a mean loss of 45.02 grains each.

Exposed thus for nine consecutive days the lowest mean weight was 391.18 grains, and the greatest mean loss 46.32 grains each or 10.587 per cent.

Subjected then to a dry heat of 180° to 212° in a steam kettle, for sixteen hours, they suffered an additional mean loss of 19.04 grains.

Exposed again at ordinary temperatures for twenty-four hours the mean weight arose to 391.5 grains.

This alternate heating and exposure was repeated a second and third time with similar results. The greatest mean loss being 19.8 grains per ounce, or an additional loss upon the 391.18 grains of 5.06 per cent. The entire loss upon the fourteen ounces heated to 212° was 66.12 grains each, or 15.11 per cent.

The salt finally exposed during a very rainy night and morning regained a mean of 392.19 grains, when, after mixing the whole fourteen ounces very thoroughly together, the salt was restored to the bottles, putting up only about $12\frac{1}{2}$ scant avoirdupois ounces of the salt as it is usually dispensed and administered. The half bottle was reserved for the after experiments, and marked impure sulphate, effloresced.

In the following experiments it became necessary to use a more delicate balance, and the French decimal weights. The avoirdupois ounce should, by calculation, be equal to 28.3465 grammes; but, in practice, with our balance and weights it is equal to 28.4856 gram., and this latter is therefore taken as the basis of the calculations.

The authoritative composition of the officinal disulphate of quinia is as follows:

2 eqs. Qn	= 324	= 74.31	per cent.	= 21.1682	gram.	or	325.115	grs.	per oz.
1 eq. SO ₃	= 40	= 9.17	"	= 2.6133	"	or	46.137	"	"
8 eqs. HO	= 72	= 16.51	"	= 4.7040	"	or	72.247	"	"
		<hr/>			<hr/>		<hr/>		
	436	99.99		28.4855			437.499		

Experiment No. 2.

The contents of a new bottle of the commercial salt was taken and found to weigh 28.5050 gram., but assumed at 28.4856 gram.

This dissolved very easily in 28.5 times its weight of boiling distilled water. This solution was boiled in a flask till the proportion of water was reduced to 23.96 times the weight of the salt, and the boiling point arose to 216° . After being removed from the flame, it remained perfectly free from any appearance

of crystallization until the temperature had fallen below 205° ; and the temperature fell to 200° before general rapid crystallization was fairly established in the solution. This crystallization seemed complete in four or five hours, but the flask was exposed at ordinary temperatures for nineteen hours, and then for seven hours was kept at temperatures between 55° and 65° by means of iced water. The mother water was then quickly separated and set aside for examination; and the crystals washed in a filter, drained, dried and effloresced at 212° , and weighed. The washings were then evaporated to dryness and the residue weighed. These, with the calculated quantity of $2\dot{Q}n, SO_3, + 8HO$, in the mother liquor, (1 part to every 740 parts,) = .9223 gram., when added together and corrected for the loss by efflorescing, give a total net yield of 25.3069 gram. of $2\dot{Q}n, SO_3, + 8HO$, for this ounce of commercial salt, indicative of a loss of 11.123 per cent. The loss by efflorescing is calculated upon Exper. No. 1., and the residue of the washings is assumed to be all disulphate of quinia and water. The first crop of crystals of this experiment are assumed to be the pure officinal salt, and are to be used in the following experiments as pure effloresced sulphate.

Experiment No. 3.

Similar quantities of the pure and impure effloresced sulphates were placed side by side in a box of bibulous paper, and allowed to stand exposed to the ordinary atmosphere for sixteen hours. They were then heated for two hours at temperatures from 200° to 218° , and again exposed at ordinary temperatures for twenty hours, at the end of which time they were assumed to have attained a corresponding condition of hydration, as far as the disulphate of quinia was concerned. From each of these salts 10 grams. was weighed into separate capsules, and the capsules and contents were subjected to the same steam heat, at the same time, for eight hours—five hours at temperatures varying between 220° and 236° —and three hours at a steadily-maintained temperature of 242° , without any appearance of fusing in either. They were then placed under a bell glass, over sulphuric acid, for fourteen hours, and weighed. The pure salt had lost .4577 gram., or 4.577 per cent.; whilst the impure

salt had lost .5431 gram., or 5.431 per cent. Then exposed to the ordinary atmosphere for five hours, the pure salt regained its original weight within .0029 gram., while the impure salt was still .0461 gram. short.

This experiment terminates those in which drying was resorted to in order directly to estimate the amount of water present; and the concise result is that

Dried by exposure at ordinary temperatures, the salt loses				10.587 p. c.
do.	do.	212°	do.	15.11 p. c.
do.	do.	242°	do.	15.223 p. c.

Now if this salt was pure disulphate of quinia, as it is not; and if the final heating had perfectly effloresced it,—which is not probable, as the salt did not fuse—it should still have contained 2 eqs. or 4.128 per cent of its water of crystallization. But in drying it had lost within 1.29 per cent. of all the water it should have contained as the chemically perfect salt represented by the analysis of the manufacturers.

Dr. Wood, (Dispensatory, 10th edition, p. 1172), Pereira, (Materia Medica, Am. ed., vol. 2, p. 694), and Brande, (Manual Chem. vol. 2, p. 1436) agree that the crystals in efflorescing lose one-half their water of crystallization. But if we double the loss this salt suffers at 212°, it would indicate a loss which I now know to be incorrect.

These authorities (all I have at hand that are definite upon the character of the officinal salt,) all quote Soubeiran in brackets, or Liebig, as giving the loss by efflorescing, at 6 eqs. or three-fourths of the water of crystallization; and this latter is probably the true loss of a pure salt that has been fused. Brande, (op. cit. p. 1435), says the pure salt, heated to 212°, should lose only 8 to 10 per cent. in weight, and I believe this test, as a standard, is better expressed thus than by the U. S. and London Pharmacopœias. In my single comparative experiment with what may be considered a pure disulphate of quinia, it held 4.57 or probably 4.59 per cent. of water above the 2 eqs., or 4.128 per cent., at ordinary temperatures; and after being heated to 242° regained its full weight, within a mere fraction, in five hours.

These deductions from the results of the foregoing experiments are, however, very much confused by the results that follow:

Experiment No. 4.

From the impure effloresced sulphate used in No. 3, two portions of 5 grams. each were weighed off, and marked A and B. Portion A was placed in a beaker, and 200 gram., or about 7 f.℥. of distilled water, acidulated with 14 drops of concentrated sulphuric acid, was poured upon it, and the whole stirred till solution was effected.

To a similar quantity of water in another beaker, double the quantity of sulphuric acid was added, and this dilute acid was then carefully saturated from a measured quantity of solution of soda, s. p. 1.063, and the quantity thus used was noted as 5 f.℥. From the same solution of soda 5½ f.℥. was then measured off and thrown at once into the quinia solution, and the whole actively stirred for five minutes. The beaker was then covered, and allowed to stand five hours. This standing is very necessary, for during this time the precipitate slowly contracts, and forces out minute quantities of undecomposed sulphate, which otherwise would render the filtered mother liquor milky after, or during its separation from the precipitate. The precipitate also becomes granular, and much more easily managed without loss.

The supernatant liquor was then passed through a dried and weighed filter of Swedish paper, and then the precipitate was thrown into the filter and washed till the washings gave no reaction with solution of chloride of barium. The drained precipitate was then carefully transferred to a weighed capsule, and the filter returned to the funnel for farther use.

The 7 f.℥ of mother liquor, and 2 f.℥ of washings, were then evaporated together to about 3 f.℥, and the whole residue collected upon the filter and washed with distilled water till the residuary liquor amounted to about 7 f.℥. The amount of colored precipitate thus obtained, when dried and fused, was .1252 gram. or about 3.07 per cent. of the whole. The residuary liquor was very slightly bitter, and probably contained an inappreciable portion of the precipitate. The residue from the washings in a weighed watch glass, and the precipitate in the capsule were placed in an air bath and heated till they fused completely, when they were transferred to the bell glass over sulphuric acid. The filter was then dried precisely as before being used, and also

placed under the bell glass to cool. In three hours the whole were put upon the balance and weighed. The net yield of fused precipitate was 4.0702 gram.

Experiment No. 5.

Portion B, of the last experiment, was dissolved in fifty grains of distilled water, acidulated with 18 drops of hydrochloric acid. In connection with this solution, it is, perhaps, worth while to mention a convenient method for removing insoluble particles, that are frequently found in such solutions, without the trouble and loss of filtration. The solution was stirred around until it was in a rapid whirl, and the glass stirring rod removed and rinsed off into the solution with a few drops of distilled water from the wash bottle, and the square ground end carefully dried. A small pellet of wax, weighing .1562 gram., was then made to adhere to the dry flat end of the rod, in the form of a flattened sphere. On examining the solution then, the whirling motion was found to have nearly ceased, and the particles all collected into a little hillock in the centre of the beaker. The armed stirring rod was then carefully passed straight down upon the particles, with a force just sufficient to imbed them in the wax, and then removed and again rinsed off into the solution with a few drops of water. The wax pellet, containing the particles, was then carefully removed, dried, and replaced in the balance; and enough of the original salt was placed upon the .1 gram. platinum weight of the opposite pan, to restore the equipoise. This salt was then washed off into the solution and dissolved.

Solution of chloride of barium was then added in excess, and the whole allowed to stand closely covered, for twenty-four hours. The supernatant liquor was then drawn off by a pipette, and replaced by distilled water, when the whole was well stirred and again allowed to stand twenty-four hours and decanted. Duplicate filters, about 2½ inches in diameter, were then cut of exactly the same size, from the same piece of paper, and upon one of these the precipitate was collected, washed with 50 gram. of water and drained. The empty duplicate filter was then perfectly burned in a weighed crucible, cooled over sulphuric acid, and then found to yield .0014 gram. of ash. The filter and pre-

precipitate were then added to this ash in the crucible, and the whole was well ignited, cooled over sulphuric acid and weighed. The net yield of BaO , SO_3 , was 1.4686 gram.

Then, as $116.7 = \text{eq. of BaO}$, $\text{SO}_3 : 40 = \text{eq. of SO}_3$, :: 1.4686 gram. BaO , SO_3 : .5033 gram. SO_3 = the amount of acid obtained.

Then 4.0702 gram. of base + .5033 gram. of acid, = 45735 gram., which leaves .4265 gram. as the quantity of water. held by the 5 gram. of effloresced commercial salt, or 8.53 per cent. But the acid and base are not in the equivalent proportions for disulphate of quinia, the acid being .178 per cent. in excess. Showing either free acid, a portion of neutral salt of quinia, or some foreign base of higher saturating power.

Experiment No. 6.

The same quantities of the pure effloresced sulphate, as in experiment No. 4, were weighed off at the same time, and marked C and D. Portion C was treated precisely like portion A, in every practicable respect, and yielded a net fused precipitate of 4.2536 gram., or 4.506 per cent. more of base.

Experiment No. 7.

Portion D was treated precisely like portion B in every practicable respect, and yielded a net ignited precipitate of 1.4706 gram. BaO , SO_3 = .50406 gram. SO_3 = the amount obtained.

Then 4.2536 gram. of base + .50406 gram. of acid = 4.75766 gram. as the yield obtained from 5. gram. of the salt, leaving only .24234 gram., or 4.847 per cent. of water, present in this effloresced salt. But on being heated to 242° without having fused, this very identical 10 gram. of salt lost 4.577 per cent. of its weight; and this would indicate that when thus heated it could have contained only .27 per cent. of water of crystallization.

The acid and base are not in the equivalent proportion for disulphate of quinia; but instead of there being an excess of acid, as in Experiments No. 4 and 5, there is here an excess of base, or, in other words, a deficiency of acid of .4025 per cent.

In obtaining these results every known source of error was avoided; and they were all verified by repetition, but by the same method of proceeding. The time necessary for further research to elucidate the discrepancies, is not at present at my

command; but I hoped to have brought the subject into a light sufficiently interesting and important to induce some one, better qualified, to take up and pursue the subject.

Experiment No. 8.

The reserved mother liquor of Experiment No. 2 weighed 682.5475 gram., and contained, according to the following equation, based upon the solubility of the disulphate of quinia, .9223 gram. of that salt. For as $740 : 1 :: 682.5475 \text{ gram.} : .92236 \text{ gram.}$ This mother liquor was evaporated to one-eighth its bulk, or till crystals began to form on the surface of the hot liquor, and was then set aside to crystallize. These crystals, when washed, dried, effloresced at 212° and cooled, weighed 1.6356 gram. As these crystals must have contained nearly all the disulphate of quinia that remained in the mother liquor, it is requisite to subtract the .9223 gram. less 8.8 per cent., equal to .8412 gram. of effloresced disulphate from their weight. This leaves the brown crystalline impurity at .7944 gram. The remaining mother liquor and washings were then evaporated together to dryness, and heated for some hours at 218° . The red brown amorphous residue then weighed .7528 gram. Thus the total impurity of a salide and amorphous character contained in one ounce of the commercial salt is represented by the following formula:

$$.7944 + .7528 = 1.5472 \text{ gram., or } 6.074 \text{ per cent.}$$

Experiment No. 9.

From the effloresced crystalline impurity of the mother liquor, from Experiment No. 8, two portions of .7 gram. each were weighed off at the same time, and marked E and F.

Portion E was dissolved in water acidulated with sulphuric acid, precipitated by solution of soda, and the precipitate washed, dried and fused, when it weighed .4837 gram.

Portion F was dissolved in water acidulated with hydrochloric acid, precipitated with solution of chloride of barium; and the precipitate when washed, dried and ignited, yielded .0662 gram. of SO_3 .

The combined weight of this acid and base subtracted from the weight of the effloresced salt used, leaves .1501 gram., or

21.44 per cent. of water of crystallization present, and the percentage composition of the salt appears to be as follows :

Base	-	-	69.1	per cent.
SO ₃	-	-	9.457	"
HO	-	-	21.442	" by deduction.
				<hr/>
				99.999

Hence it follows as a deduction, that the base cannot be quinia alone, unless it was in the form of neutral sulphate.

The red brown amorphous matter I have not examined, except to determine by chlorine, water and ammonia that there was only a trace of quinia in it.

These, then, are the experiments and results of the examination as far as I have time to carry them out; and I am sorry that other occupations prevent me from pursuing so important and interesting a subject to something like completion. The deductions from these results I leave to those who read and examine them, merely remarking that the experiments were prosecuted far enough to make it quite clear to my mind, that although there is not 10 per cent., nor perhaps even quite 5 per cent., of uncombined water in this commercial salt, there is more than 10 per cent. of water and other impurities, two-thirds of which, at least, might and should be avoided in the manufacture of medicinal preparations.

Naval Laboratory, New York, Aug. 8th, 1855.

LETTER FROM MESSRS. POWERS AND WEIGHTMAN RELATIVE TO THEIR SULPHATE OF QUINIA.

MR. W. PROCTER, JR.

Dear Sir,—Though the politeness of Dr. Squibb we are again put in possession of the proof sheets of a communication by him, in reply to a note of ours in the last number of the Journal, on the subject of sulphate of quinia. Our former communication was necessarily brief, and the results of our experiments therein detailed were not numerous, nor were they conducted through any protracted period, and might not therefore be looked upon as conclusive as those detailed by the Doctor.

Since then, however, we have had more experiments made on

the same subject, and with the same results, which will be alluded to hereafter.

Dr. Squibb's inference, in his first communication, is based principally upon a larger loss of the sulphate in drying within certain points of temperature, than is stated by some authors, which he now acknowledges to have been practically and technically incorrect. His remarks upon our pecuniary sensibilities might have been correct, had no other issues been involved, and his concluding remark in the same paragraph we cannot think sustained by his subsequent experiments. Our experiments, which he seems now to think "are even less accurate than the statements they propose to correct," have been verified by repetition, and still further extended by additional ones, and we see no reason to change the inferences then made.

We have assumed the statement of Soubeiran, quoted in brackets by Dr. Wood, to be correct, and Liebig agrees in the same calculation, that sulphate of quinia loses six atoms of its water of crystallization by exposure to warm dry air; this was the result of our experiments. We can see no inaccuracy in this. If, however, we assume the loss to be only four atoms by exposure, as is stated by Dr. Wood, quoting from Philips, then Dr. Squibb's assertion may be correct. Of the eight atoms of water of crystallization, most authors consider two as being retained at any temperature short of fusion and decomposition. Dr. Squibb has again been led to infer from this that there is still more water in combination with our sulphate than ought to be. Our recent experiments have led us to think differently. Which of the two are right, others must determine.

In drying either sulphate of quinia or the alkaloid, much depends upon how it is subjected to the action of heat, whether exposed with a large surface to a heated dry atmosphere, or whether enveloped in paper, or in a capsule on a hot surface, heated by steam or otherwise. In the latter case, but a small point of the capsule comes in contact with the heated surface, rarely heating the material to be dried to the same temperature; and if it is thick, rendering a prolonged exposure with much stirring necessary to bring all the particles in contact with the hot point. May not some of the differences of authors be owing to the different modes of ascertaining the loss in drying?

Prolonged exposure at a lower temperature will produce the same loss in sulphate of quinia, as one of shorter duration of a higher temperature, and *nearly the whole of the water of crystallization may be driven off at a temperature short of fusion.* This we think will satisfactorily account for Dr. Squibb's loss of 15.11 per cent., and it is only to be regretted that the Dr. did not push his experiments still further, to ascertain whether the two atoms of water which he calculates as still remaining in combination, were really there. The results of our experiments are as follows :

No. 1. 100 grs. sulphate of quinia exposed to the air at a temperature varying from 70° to 90° for 4 days, lost						11 grs. = 11 p. c.
" 2.	300 grs. exposed to an atmosphere heated to 160°, 24 hours	lost	33 grs.	=	11 "	
" 3.	300 "	"	180 1 "	"	33 "	= 11 "
" 4.	the same "	"	180 6 "	"	38 "	= 12.66
" 5.	100 grs. "	"	170 24 "	"	11 "	= 11 p. c.
" 6.	the same "	"	170 40 "	"	12.4 "	= 12.4
" 7.	"	"	170 7 days,	"	15.5 "	= 15.5
and then ceases to lose,						
" 8.	66 grs. exposed in a capsule in an oil bath heated to 300°	1 hour	10.3 "	=	15.6	
" 9.	the same heated to fusion in the same bath,		10.7 "	=	16.2	

It is evident from the above, that the loss of water is by no means as definite as is generally stated; but that temperature, as well as its continuance, will produce results which may make any assertion of loss within these limits right or wrong.

The latter part of the Dr's. remarks, about there being other bases in combination in the mother liquor, are to us very indefinite. That he failed to obtain the same quantity of crystallized or effloresced sulphate as that originally employed, is to us not surprising, when the influence of heat in changing proximate principles is considered, and our only wonder is that he got as much as he did.

Pasteur describes two new alkaloids, derivatives from quinia and cinchonia, obtained by the action of heat, and every manufacturer who knows how readily these changes take place, learns, practically, the necessity of avoiding prolonged heating and torturing.

In conclusion, while we make no claim of absolute chemical purity for our preparations, yet we consider the existence of a *trace* of the usual impurities from which each preparation has been made, to be no indication of adulteration; and we do claim for them a degree of medicinal purity, comparing favorably with the productions of manufacturers of this and other nations.

This is the first time we have thought it necessary to step out of our usual business, thus to defend any of our preparations; and, in this case, nothing but the position occupied by Dr. Squibb, the errors of his communications, some of which are already acknowledged, and the marked manner in which we have been singled out, have induced us to do so.

Very respectfully, yours,

POWERS & WRIGHTMAN.*

August 13th, 1855.

ON THE SO-CALLED CREAM SYRUPS FOR MINERAL WATER.

By THE EDITOR.

The "mineral water" season in this city opened with a new class of syrups, which have received the generic title of "Cream;" from the fact that the original recipe required that substance as the basis in their preparation. The origination of these syrups is attributed to Mr. C. Augustus Smith, formerly of Cincinnati. Their introduction into this city belongs to Mr. Alfred B. Taylor, who, without being aware of their use in Cincinnati, originated the following formula, which he has kindly communicated for publication, at our request.

Take of Good cream,

New milk, of each,

two pints,

Sugar in powder,

four pounds, (Avoir.)

Mix the cream and milk, add to them the sugar, and dissolve without heat, by stirring; or better, on a funnel by displacement. This is the lactescent basis from which the several flavored syrups are made, and is never used alone. The most popular of the compound cream syrups is that called "Vanilla Cream," which Mr. Taylor makes as follows:

Take of Strong fluid extract of Vanilla, (3j. to 3iv.) 3 fluid drs.

Simple syrup,

Cream syrup, of each,

one pint.

Mix.

For strawberry, raspberry and pine-apple cream, mix equal bulks of the respective syrups with the simple cream syrup.

The chief objection to the use of cream syrup is its want of permanence. It should, during the weather in which it is most

* See editorial, page 478.

employed, be made freshly every day, or, at least, every other day; yet if the proper precautions are taken to keep it in ice it may be kept for a week.

In a conversation with Mr. O. S. Hubbell, (of 12th and Chestnut sts.,) whose familiarity with all that relates to syrup making and mineral waters is well known, he kindly offered to give us information, and since has communicated the following:

MR. WM. PROCTER, JR.

My Dear Sir:—The idea of cream syrups is due to our friend Mr. C. A. Smith, who employed them many years ago in Cincinnati. In addition to their luscious flavor, they contain so many elements of the bodily constitution, that they constitute no unimportant addition to our list of popular and wholesome drinks. Out of the casein are formed the albumen and fibrin of the blood, and the proteinaceous and gelatinous tissues. The butter serves for the formation of fats, and contributes, with sugar, to support the animal heat, while the cream furnishes, besides, all the salts which the body requires.

CREAM SYRUP is made as follows:

Procure one gallon of fresh sweet cream, (which costs in Philadelphia 75 cents,) dissolve therein, without heat, fourteen pounds (avoir.) of pulverized sugar. If the dairy maid dipped too deeply in skimming, a little more sugar must be added. The whole will now measure about two gallons, and costs, per gallon, about 85 or 90 cents. It should be bottled immediately, labelled "Cream Syrup," and kept upon ice, or a cool cellar bottom, and will be good for from three to eight days, according to the freshness of the cream and the temperature in which it is kept.

By itself, it never pleases, but mixed in equal parts with strawberry, pineapple, vanilla, orange, or other syrups, it yields a corresponding and surpassingly agreeable syrup. The fruit syrups, however, must be something more than colored solutions of sugar; they must possess the odor and taste of the fruits they purport to represent, or we shall vainly endeavor to improve them with cream.

If orange cream be desired, the orange syrup must be made as follows: Pare, thinly, the rinds from *twelve* fresh sweet oranges, reject the pulp, and grind the peel to a smooth paste, with a pound or two of sugar, and an ounce of citric acid; add, thereto,

by degrees, two gallons of water and sufficient sugar to form a syrup, without heat, [about 30 lbs.,] strain and bottle at once. It must be kept on a cool cellar bottom until wanted.

Lemon syrup, when used to flavor cream, must be prepared from the fresh peel in a similar manner.

NECTAR CREAM is elegantly made by mixing six parts of cream syrup with three parts of vanilla syrup, and one part each of the syrups of sherry wine, pineapple and lemon. To this mixture, a little cochineal may be added, to please the eye.

A factitious cream syrup, that keeps well, may be made from 12 lbs. (avoid.) of fresh Jordan sweet almonds, four gallons of milk, and 60 lbs. (avoid.) of sugar, after the manner of orgeat. It answers extremely well when it is impracticable to use the veritable cream.

This is about all I can give you respecting cream syrups. If you desire anything further, I will be pleased to communicate all I know.

With much regard,

O. S. HUBBELL.

August 13th, 1855.

We believe the cream syrup made with good sweet almonds and fresh milk, is, in all respects, equal to real cream syrup; it keeps better, and is more uniform in consistence, inasmuch as cream varies with the care used in the skimming process, and with the season.

Cream nuts (Brazil nuts,) have also been employed instead of almonds.

As the sale of carbonic acid water, as a beverage, by pharmacutists, appears to be increasing, and as its excellence depends largely on the temperature of the water and the flavor of the syrups, these two points should be constantly attended to. It is now generally conceded that a coil of from 50 to 150 feet of block tin tubing, according to the amount of draught, arranged around a lead lined box or tub with the ice in the centre, and a lateral tube to convey off the waste water after it rises to the top of the coil, is the best refrigerating arrangement. By surrounding the entire surface of the coil with ice-water at 32° F., the water may be cooled as fast as it is drawn through the tube, especially, if the ice extends to the bottom of the box or tub.

SYRUP OF HYDRIODIC ACID.

By MR. JAMES MURDOCH.

Hydriodic acid in a liquid form has been introduced into medicine by Dr. Andrew Buchanan, as having the therapeutical powers of iodine without its irritant action. It has also been employed by him in the treatment of choleraic disease, and accordingly becomes a preparation of considerable interest.

The following speedy formula he has given for preparing it:—

Take of Tartaric acid,	264 grains,
Iodide of Potassium,	330 grains.

Dissolve each separately in f. ℥jss. of distilled water; mix the solutions, agitate and strain to separate the bitartrate of potash, adding water to make up the measure to f. ℥vj½. Each fluid drachm of this solution should contain 5.072 grains of hydriodic acid, equal to about 5 grains of iodine. When the solutions are mixed the liquid assumes a slight yellow color, and in ten minutes after gives a slight tinge of violet with a cold solution of starch, which gradually changes to a deep blue.

This rapid decomposition appears to arise in some measure from the agitation necessary to effect the separation of the bitartrate, and consequently greater contact with the air. When hydriodic acid is prepared by the sulphuretted hydrogen process, it does not show decomposition for an hour or two after it is prepared; but if moderately agitated it shows the presence of free iodine much more speedily. It is, therefore, essential in dispensing this acid, to prepare it extemporaneously and supply it frequently to obtain its medicinal action. It may very speedily be prepared by the above process; and for convenience the solutions may be kept ready made and mixed when required; but as 264 grains of tartaric acid in f. ℥jss. of distilled water measures f. ℥xv., and 330 grains of iodide of potassium in the same quantity of water, measures f. ℥xiv., it will be necessary to employ them in these relative proportions. Dr. Buchanan also directs it to be taken in starch gruel, which has the chemical effect of combining with the iodine that is liberated during the time of its administration.

I find that hydriodic acid may be prevented from undergoing this decomposition when in the form of a syrup.

The antiseptic properties of sugar are well known to the

Pharmaceutist, in the vegetable kingdom in the case of vegetable syrups, and in the mineral kingdom in the case of certain proto-salts of iron, where the presence of sugar prevents the latter from becoming peroxidized by the absorption of oxygen, as in the cases of the carbonate, iodide and protonitrate of iron.*

What method, therefore, will be best adapted for the preparation of this syrup? In the usual way of preparing hydriodic acid, by passing sulphuretted hydrogen through iodine suspended in water, the iodine is very apt to be enveloped in portions of the sulphur that is set free, and escape the action of the H S. This being guarded against, a solution of hydriodic acid could be obtained, from which a syrup might be prepared, if cautiously operated upon, that would contain no free iodine. The repugnance, however, that is usually felt by the Pharmaceutist to the employment of H S, as the means of preparing pharmaceutical products, would render this process objectionable, although it should be found to be in other respects available.

With another means of preparing this acid, by decomposing a solution of iodide of barium by the equivalent of sulphuric acid, and filtering to separate the insoluble sulphate of barytes, as the iodide of barium itself is an unstable compound, it would be necessary to prepare this salt at each manipulation.

Assuming, therefore, that if a syrup can be prepared by Dr. Buchanan's solution that shall contain no free iodine, it will furnish the most suitable manner of obtaining this acid for medicinal purposes, I have to propose the following proportions for a syrup. It is necessary, however, to observe, as one of the conditions of success, that the iodide must be free from any trace of iodate of potash.

Of four different samples of iodide that came under my notice, all gave a slight iodine reaction with solution of tartaric acid and starch. These, although containing extremely little of the other impurities usually found in iodide of potassium, were contaminated with a minute portion of iodate of potash. They had been prepared by what is known as the caustic potash process, and accordingly extremely liable to contain some undecomposed iodate.

*Syrup of protonitrate of iron, *Pharmaceutical Journal*, vol. xi., pages 329 and 330. W. Procter, Jun., and W. Livermore.

But as it is quite possible to produce a salt by this process that shall be entirely free from even a trace of iodate, I think it is only necessary to guard manufacturers against this salt occurring in their product, to make it suitable for preparing hydriodic acid. I have accordingly used an iodide prepared by the Pharmacopœia method of decomposing the solution of iodide of iron by carbonate of potash:—

THE SYRUP.

Take of Sugar	.	.	3ij. 3ss.
Water	.	.	3v.

Dissolve in a flask with the aid of heat, and allow it to cool. Prepare solution of hydriodic acid as before mentioned, without adding any of the additional water. This operation should be done speedily, and it may answer for that end to strain it through calico. If paper were used, decomposition would show itself before filtration could be completed, unless the quantity was small. Of this strong solution take f.3ss and ʒj. and mix with the syrup. The whole should measure f.3ijss., and each f.3j contain the equivalent of gr.ij. of iodine.

Or it may be prepared by dissolving the hydriodate and tartaric acid, each in syrup instead of water, mixing them together and letting it stand for a few hours to allow the bitartrate to settle, and pouring off sufficient for the required quantity of syrup. With this latter mode, which appears the more feasible of the two, a slight decomposition takes place with the syrup in the first instance, probably owing to the quantity of sugar being insufficient to preserve it; but after being mixed with the larger portion of syrup it remains unchanged.

Syrup of hydriodic acid, by the first method, I have had prepared since the 3d of June, and it remains nearly colorless. I have also syrups having some color, which have been made for several months, that have the same appearance as when first prepared. In a syrup prepared early in the winter the sugar has crystallized out of the solution, and the liquor on the surface, now weak of sugar, has a bright yellow color, and gives a strong reaction with starch; but the crystallized portion is not affected by it unless a little nitric acid is also added, when it reacts strongly.

Hydriodic acid being gaseous it will not be possible to procure it in a solid form combined with sugar. When a strong solution

is mixed with powdered sugar and moderately heated, it gives off bubbles of hydriodic acid, becoming darker in color, reacting strongly with starch, and ultimately becoming completely black, with abundance of free iodine.

The precise action of sugar with reference to those compounds that have been named, is still obscure. Klauer considers that a regular compound is formed in the case of carbonate of iron, but the subject of this notice is an instance where the action of sugar is not confined to salts of iron.

In conclusion, it is very probable that the protective agency of sugar, is exercised over many other decomposable substances that have not been examined as to this property; and if it be so, it must become of corresponding importance as a chemical agent in Pharmacy.—*London Phar. Jour.* August 1st, 1855.

Glasgow, July 9th, 1855.

NITRATE OF SILVER AND TANNIC ACID IN PILLS.

By W. COPNEY.

Having been applied to as to the propriety of exhibiting these substances together in the form of pills, some experiments were made to determine the chemical change which might occur.

It was believed, *à priori*, that a change would occur, from the well known tendency of tannic acid to run into gallic acid when exposed to the air in a humid state, or when brought into contact with oxygen acids or their compounds. It was thought, however, that in the form of a pill, made as firm as possible, any change which might occur would not proceed very rapidly. Some pills having been prepared, each composed of half a grain of nitrate of silver and three grains of tannic acid, with a suitable excipient, it was observed that they quickly became swollen and subsequently cracked.

An indication was thus given that a change had taken place, which was supposed to have arisen from the absorption, by the tannic acid, of oxygen at the expense of the nitrate, reducing it to oxide, with the formation of gallic acid; the softening, enlargement, and cracking of the pills being referred to the formation of water and the escape of carbonic acid gas, which are always produced when tannic acid is converted into gallic acid.

Solutions of these substances were then separately prepared

and mixed. The liquor became brown, and a precipitate was speedily formed. On leaving the mixture during the night, the surface was found covered with a thin pellicle of reduced silver, and deposited was found some oxide of silver. It thus became clear that the tannic acid had not only the power, as was expected, of reducing the nitrate of silver to oxide, but had further reduced a portion of the oxide itself to the metallic state.

One of the pills before mentioned, having become quite hard, was triturated with distilled water, and the liquid filtered. To the filtrate was added a chloride—not the least trace of chloride of silver was observed; to another portion of the filtrate was added sulphuretted hydrogen, without the least change of color.

It may, we think, therefore, be fairly deduced that such a compound is decidedly incompatible, at least as far as the chemistry of the compound is concerned. The therapeutical view of the matter must be left to the judgment of the medical practitioner, there being many compounds which, although composed of incompatible elements, are not, necessarily, therapeutically incompatible.—*Ibid.*

ON THE MANUFACTURE OF ALUMINIUM.

By M. H. ST. CLAIRE DEVILLE.

The following is the substance of a paper presented to the French Academy at the session, June 18th, 1855, and published in No. 25 of the *Comptes Rendus*.

The author stated that he had the honor of presenting to the Academy the first specimens of aluminium that he had prepared at the Javel Chemical Works, under the patronage of the Emperor, at his expense, by a process which he describes. He considers that manufacturing processes have been attained for the production of chloride of aluminium and sodium, the materials used in the fabrication of aluminium.

He obtains the chloride of aluminium by acting on a mixture of alumina and coal tar, previously calcined, with chlorine, which is readily effected in a common gas retort, the layer of the mixture being from four to eight inches thick, which is readily penetrated by the gas. The chloride is condensed in a chamber of glazed brick work. Obtained in this way it is a crystallized compact substance of a sulphur yellow color, of considerable density and but slightly ferruginous. This contamination is removed by passing

the vaporized chloride over points of iron heated to 750° Fahr., whereby the sesquichloride of iron is fixed as protochloride, whilst the aluminous chloride passes out and condenses in colorless and transparent crystals.

Sodium may now be prepared with facility in large or small vessels. M. Deville has carefully studied with great care the influence of temperature, of the heating surfaces, and the quickness with which the sodium vapor issues from the apparatus, and he is convinced that a proper regulation of the heat, and the diameter of the tubes for the exit of the sodium, will enable him to produce this metal at a heat as low as that of melting silver. In the experiments already made the heat used was less than that necessary in manufacturing zinc. The author is now seeking a continuous process for making sodium, as he finds it unnecessary to redistil the metal, it being pure from the first operation.

In relation to the reaction of chloride of aluminium with the sodium, it is effected in metallic tubes, which in shape and in process of management have not yet been well adapted to a manufacturing scale, yet the author thinks that the difficulties which at present exist will soon be resolved.

M. Dumas presented to the Academy, on behalf of M. Deville, some large and beautiful masses of chloride of aluminium, of sodium, and of metallic aluminium in bars, obtained at the Javel works during the course of experiments there made at the expense of the Emperor, and accompanied them with the following remarks :

The process of making chloride of aluminium having afforded it to the extent of 200 to 300 kilogrammes, it may be considered as an operation susceptible of being extended on a manufacturing scale.

M. Deville's process for sodium yields that metal with great regularity and facility.

The materials employed in the manufacture of one kilogramme of aluminium—alumina from ammonia alum, chlorine, charcoal, carbonate of soda and chalk—are all cheap, being worth now about 32 francs, whilst the price of sodium before was 1000 francs per kilogramme, at which rate that quantity of aluminium would cost 3000 francs.

M. Deville's experiments not only demonstrated the possibility

of making aluminium on a large scale, but by producing sodium at a cheap rate have brought its valuable properties within the reach of scientific men as a re-agent.

In fact, with the energy of potassium, this metal presents none of the difficulties in its preparation peculiar to the former. M. Deville's experiments show that it may be made almost as easily as zinc, that it may be exposed to the air in a fused state without inflaming, and may flow in the fluid state from the apparatus used in making it.

M. Dumas alludes to the reduction of chlorides as a feature in metallurgy likely to be productive of new results. He considers Marseilles as the best location for the manufacture of aluminium, owing to the cheapness of materials obtainable there.

In concluding, M. Dumas called the attention of the Academy to the sonorousness of aluminium, which can only be compared to that of the most sonorous bronzes, such as bell-metal, which has not been noticed in any other pure (unalloyed) metal, thus adding another to the singular features of this curious metal.

Comptes Rendus, June 18, 1855.

AROMATIC SYRUP OF GALLS.

The following preparation has been considerably employed in Philadelphia, and is attributed by some to the late Dr. Joseph Parrish, of this city. It is used in the diarrhoea of children.

Take of Galls, powdered,	half an ounce.
Cinnamon, bruised,	
Nutmegs, bruised, of each	two drachms.
French brandy,	half a pint.
Sugar, in small lumps,	two ounces (troy).

Macerate the solid ingredients in the brandy for twenty-four hours, throw on a filter, and, when drained, add diluted alcohol till half a pint in all has passed.

Having placed the tincture in a shallow capsule, suspend the sugar over it, on a slip of woven iron wire, and then inflame the tincture. The flames proceeding from the burning alcohol fuse the sugar and scorch it so as to produce a portion of caromel, and as it melts it falls into and dissolves in the liquid beneath. When the combustion stops the whole should be stirred and filtered for use.—EDITOR AMER. JOUR. PHARMACY.

ON AN EASY METHOD TO PURIFY SULPHURIC ACID FROM ARSENIC.

By L. A. BUCHNER.

[From Buchner's Repertorium, 1855, p. 124. By J. M. Maisch.]

It is a well known fact that arsenious acid by aid of hydrochloric acid is transformed into chloride of arsenic. Liebig (Jahresbericht, 1851, p. 680) has found, that chloride of arsenic is separated in oily drops, and may be distilled off, when arsenious acid is dissolved in hydrochloric acid, or on the mixture of this with a liquid containing arsenious acid, afterwards adding concentrated sulphuric acid. Chloride of arsenic boils at 132° C., (270° F.), and evaporates very easily with the vapors of hydrochloric acid, under its own boiling point, whilst concentrated sulphuric acid does not evaporate until it has reached its boiling point, at $325-327^{\circ}$ C., ($617-620^{\circ}$ F.)

I do not know that these facts have been employed for the removal of arsenic from sulphuric acid; but that this acid may be purified by a method founded on them, I have conclusively shown by experiments. A little muriatic acid added to a sulphuric acid containing arsenic, and heating, or, what is better and preferable, hydrochloric acid gas passed into such heated acid, separates all arsenic as chloride of arsenic. Intentionally I have dissolved a large quantity of arsenious acid in concentrated sulphuric acid, and treated this solution in the above manner. In a short time the arsenic, in connection with the hydrochloric acid, was so completely driven off that not the smallest possible trace could be detected in Marsh's apparatus, even after operating for half an hour. The heating of the acid need not be continued but a short time after stopping the steam of hydrochloric acid, and every trace of it, if necessary, will be driven off.

This I believe to be the only reliable mode of making sulphuric acid free of arsenic in a short time and at little expense, for chemico-legal investigations and medicinal pharmaceutical purposes. It is well known, that this cannot be achieved by rectification of an impure oil of vitriol, inasmuch as its point of sublimation is not far enough from the boiling point of sulphuric acid, and even lower than this, it being at 218° C., (425° F. Mitchell) and to dilute the acid, precipitate by sulphuretted hydrogen, de-

cant and evaporate again, is too long and disagreeable a task to be preferred to the purification with muriatic acid; this last method, perhaps, has another advantage, to evaporate the nitrous acid present in most commercial sulphuric acid as chloride of oxide of nitrogen.

ON SULPHATE OF ALUMINA AND ITS USE.

By PROF. DR. WATTL.

[Translated from Buchner's N. Repertorium, 1855, p. 1. By J. M. Maisch.]

Sulphate of alumina is one of the most useful salts of all those that have recently come into technical use. It is often prepared in large quantities in chemical factories, for the use of paper and Prussian blue manufactories; its price is low, it is unchangeable in the air, and contains 25 per cent. of alumina, which makes it much cheaper than alum, that contains but one half of it. Chemically spoken, it may be viewed as alum without potassa or oxide of ammonia, which are replaced by alumina.

Although it has long since been known that sulphate of alumina separates both the above bases from even mineral acids, for which reason chloride of potassium is used in manufacturing alum, still nobody has thought of it yet, to separate in this way tartaric acid and potassa of cream of tartar, thus to find a new way for making tartaric acid.

1½ oz. sulphate of alumina dissolved in 1 lb. water with the addition of about ½ oz. sulphuric acid, necessary to form the double sulphate (alum), decompose 1 oz. of cream of tartar, by digestion without boiling; after a slow evaporation this will yield on cooling 2 oz. alum in large crystals, free of iron, and all the tartaric acid which may be obtained in crystals by a very slow evaporation. I recommend this new mode of obtaining tartaric acid to all manufacturers; it is much cheaper than the old way, which requires so much room, heat and time.

By means of the sulphate of alumina, the amount of potassa in table salt, Glauber's salts, cubic nitre, and in the mother liquors of sea water and saline brines, may be detected, and the allegation is not so improbable as at first it may seem to be, that in a future time we may obtain from the waters of the sea, an article for the production of which we have at present to look to the

forests—I mean potash. The well known “Orber Badesalz,” (from the saline spring Orb, in Germany,) contains so large an amount of potassa that procuring it from such a source is not an impossibility.

Another of the properties of sulphate of alumina must be mentioned here—the readiness with which it parts with its acid. In a good glass retort a dull red heat liberates from the anhydrous salt, the sulphuric acid which distills over and leaves pure alumina in a light state behind, which may be used for preparing other salts of this base. This method to obtain a chemically pure sulphuric acid merits recommendation, as the commercial articles of this acid are scarcely ever pure, rendering them unfit for analytical investigations, as also for medicinal use.

OBSERVATIONS ON THE ROOT OF GOSSYPIUM HERBACEUM,
OR, COTTON PLANT.

By THOMAS J. SHAW, M. D., of Robertson County, Tenn.

Cotton Root—Its General Characters.—It is fusiform in shape, giving off small radicles throughout its length. The size of the root varies, according to the soil from which it is produced. Its length varies from a few inches to that of a foot. When the root is cut or broken, it displays a white color; the bark is of a reddish brown; the taste is pleasant, somewhat sweet and astringent; it contains more of the latter principle than the root from which it is procured; it is very mucilaginous in its properties. The root is easily broken when dry, but the bark is quite tenacious, pulling off in strings.

This root is too well known in this country to require a lengthy description; therefore I will pass to the chemical analysis, as prepared and furnished to me by my esteemed friend, Mr. H. B. Orr, of Nashville, Tenn.

Chemical Examinations of the Root.—The result of which, as accurately as might be determined, is as follows, to wit:

Gum, Albumen, Sugar, Starch, Tannic Acid, Gallic Acid, Chlorophyle, Iodine, Caoutchouc, Black Resin, Red Extractive Matter, Black and White Oleaginous-like Matter. The latter two abound in this plant.

Proximate Principle.—Experiments were made with a view to the isolation of the active principle of the root, which were not altogether satisfactory; for though there was no crystalline principle obtained, as was desired, making the existence of it palpable and distinct to all; still there is evidence in favor of a principle existing in it. Time did not admit of an extended experiment in this department of the analysis. The author indulges a hope of having time to examine the active principle more minutely than he has yet done. What he has seen suffices to convince him that the medical properties attributed to it are not fallacious.

The attention of the medical profession was called to the medical properties of this root, first by Drs. McGown and Bonchell, of Mississippi; the latter gentleman by an article written in the *Western Journal of Medicine and Surgery*, about the year 1842, as well as I recollect. For a want of confirmation, it passed unnoticed by the profession, until the year 1852, when it was again brought into notice in an article written by Dr. John Travis, of Marlborough, Tennessee, in the *Nashville Journal of Medicine and Surgery*. He reported but one case in which he tried it, and it was with entire success, restoring the menstrual flow in a short time, after an absence of about ten months.

I consider this root one of the very best emmenagogues of the *materia medica*, and I think it should be so classed. My reasons for considering it such, are grounded upon the different experiments which I have made with it, within the last twelve months. I sometimes use a decoction, and at others an infusion, but most generally a decoction, prepared thus:

R. Cotton Root, ℥iv.
Water, lbs. ij.

boil down to one pint. S.—A wine glass full every hour. This produces the most salutary effect in dysmenorrhœa; it acts as an anodyne in allaying the pain, and as an emmenagogue in aiding or augmenting menstruation; its action is very speedy; after its exhibition, in this case it produces an effect which, indeed, appears almost natural, that is, almost without pain; the patient, after its exhibition, feels but little inconvenience from pain, which soon subsides, and menstruation is immediately aug-

mented, without acceleration of the pulse or gastric uneasiness. There are few other emmenagogues that can claim this feature.

Its action in amenorrhœa I think superior to any other emmenagogue belonging to the materia medica, though it would be proper to pay some attention to the general health of the patient before its exhibition. It is superior to any thing that I have tried in the way of emmenagogues. I have had cases in which I first tried the usual emmenagogues, with but little effect, (or success,) when I would determine on trying the decoction of this root, which would far surpass my expectations by acting with the most marked effect; menstruation being produced on the following day after its exhibition. All of the symptoms disappeared on exhibition of this medicine. I believe this to be the best emmenagogue that we can employ in mere suppressio mensium, where there is no other disturbance in the general health.

With the usual emmenagogues, I was enabled to produce the catamenia on a young lady, which continued for about twenty-four hours, then suddenly becoming very sparse and painful; and in a few days after this period had passed, I employed the infusion of the cotton root as a means of exciting this function, which it did on the following day, a plentiful discharge being produced, which continued for five or six days. She has been regular at every period since that time, and has enjoyed good health, with the exception of a few simple attacks, which caused no derangement of the menstrual function. For about twelve months previous to the exhibition of this medicine, her health was very much impaired, but she commenced improving, and soon recovered her health. I could detail other cases similar, in which I have tried the decoction with the same effect, but I deem it unnecessary to mention its action in each individual case.

As a parturient agent, I think it superior to ergot, in one sense of the word, and in another about its equal, its action being about as prompt as that of ergot, and attended with much less danger. I have tried both in parturition, and found the cotton root decoction to act with fully as much efficacy as ergot. In some cases in which I have tried it, the pain was to some extent allayed, and labor promoted with as much speed as when ergot was administered. It appears to be perfectly harmless, from the fact that its action is almost unattended with pain. It causes

neither gastric distress, or acceleration of the pulse; if it does, it is not perceptible; both of which are occasioned by ergot, to some extent.

I have witnessed its action in retained placenta with good effect, which was an expulsion of the mass in about twenty minutes after the exhibition of the first dose. It may be proper to say, that I gave two doses before the placenta was thrown off. I believe it to be safer as a parturient agent, or an emmenagogue, or at least as safe, as any other article of the materia medica.

It should have a fair and impartial trial by the profession generally, because it will prove itself worthy of the time and labor spent in its investigation. It is handy to all, and free of expense. A few trials by the profession will confirm the truth of this short essay. Give it a trial, and it will prove itself in some case of amenorrhœa, dysmenorrhœa, or probably in some lingering case of labor, which may require the assistance of medicine, to produce contraction of the uterus for the expulsion of the child. I think it worthy of the attention of the profession, in the above cases.

Tincture of the Cotton Root as a Tonic.—There is a condition of the system in which this tincture acts as a valuable restorative. These cases are of a leuco-phlegmatic temperament of both sexes, but it is to the female sex that I wish to draw the attention of the reader. Where there is general bad health, accompanied with tardy menstruation, I have used it with the happiest effect; in a few cases of emansio mensium, caused by anemia, where the patient was troubled with pains in the loins and giddiness of the head, with a derangement of the digestive organs, such as anorexia, accompanied with an uneasy, depressed feeling at the scrobiculus cordis, every month, which was promptly relieved by the tincture, but not with the effect of producing the menstrual flux, which was afterwards produced by the decoction, I find it necessary to continue the tincture from two to four weeks. The strength of the tincture that I have been in the habit of using, is prepared thus:

Bark of the Root, (dry),	℥viij.
Diluted Alcohol,	lb. ij.

Digest fourteen days, then filter and give it in 3j. doses, three

or four times a day. The tincture which I used was prepared by myself; and as I have seen no account of its use, I claim the first preparation of it, as well as the first experiment with it. My brother, Dr. H. J. Shaw, has since tried it, with the same good effect; in fact, his experience coincides with mine throughout. In closing this short and imperfect essay, I indulge a hope that it will prove of some service to the profession.—*Nashville Journal of Medicine and Surgery, July, 1855.*

ON TRAGACANTH AND ITS ADULTERATION.

By SIDNEY H. MALTASS, Esq.

(From a Communication addressed to Mr. Daniel Hanbury.)

According to your request I have obtained from various sources some information respecting gum Tragacanth; that regarding the mode of collecting is from eye-witnesses—that upon preparing it for the European market, from personal experience.

The small prickly shrub which produces tragacanth, grows wild in many parts of Asia Minor, particularly in Anatolia. It is termed by the Greeks *Ketré*, but is also known to the educated Greeks by its real name, *Τραγακάνθιστος*; the gum is in Anatolia likewise called *Ketré*, but to the Greeks it is also known as *Τραγακάνθιστος κορυμμή*.

The principal places in which tragacanth is collected, are Caissar or Kaisarieh (the ancient Cæsarea,) Yalavatz, Isbarta, Bourdur and Angora. The gum from Yalavatz and Caissar is considered the best.

Formerly the proportion of *flaky or leaf gum* in the whole quantity collected was very small, as the peasants contented themselves with picking off from the shrubs the natural exudation; of later years, a more systematic process for obtaining the flaky gum has been adopted at Yalavatz, and has since been followed by the Caissar and other districts. Gum tragacanth is now collected in the following manner:—

In July and August the peasants clear away the earth from the lower part of the stem of the shrub, and make several longitudinal incisions with a knife in the bark; the gum exudes the whole length of the incision, and dries in flakes; three or four days are sufficient for this purpose, and the gum is then collected.

In some places also the peasants occasionally puncture the bark with the point of the knife. If the weather be hot and dry, the gum is white and clean; but if the atmosphere be damp and the heat but moderate, the gum requires a longer time to dry, and assumes a yellow or brown tinge. High winds are favorable for drying, but the gum accumulates a certain proportion of earth. Whilst the peasants are engaged in this labor, they pick off from the shrubs the gum which exudes naturally, and it is this which chiefly constitutes the quality known in England as *Common* or *Sorts*.

The whole of the tragacanth gathered is mixed and sold to native merchants, who send it to Smyrna for re-sale in bags containing about two hundred weight each. In this state it is termed *rough gum*, and contains as follows:

Flaky or leaf gum, perfectly white	40 to 50 per cent.
Ditto ditto discolored or brown	15 25
Vermicelli gum	10 15
Common or sorts	35 10

The finest parcels contain the most *vermicelli*, which is nothing more than the siftings of the *leaf* gum which is broken by carriage from the interior and by removing from one place to another, together with the small vermicular masses termed *Sesame seed*, which are collected with the *leaf* gum.

When gum tragacanth is purchased for shipment to Europe, it is prepared in the following manner:—The large, white, flaky, or *leaf* gum, termed *French quality*, is first picked out, and the residue is sifted through a coarse sieve; what remains upon the sieve is *common* or *sorts* gum, mixed with *discolored leaf*, which is returned to the pickers, who then remove the slightly discolored *leaf* gum, which is termed *English quality*. The remainder is then examined, and any stones or very black, dirty pieces, are thrown aside as refuse, the rest, composed of naturally-exuded gum and brown *leaf*, is termed *common* or *sorts*.

The head-man or master-picker then re-sifts with a finer sieve whatever gum passed through the first, occasionally throwing out any straw or light substance which rests at the top. The gum remaining upon the sieve after this second sifting is given to women to pick at their own houses. They separate the *white* from the *brown*, and the *brown* from the *common*. The first is mixed with the *French quality*, the second with the *English*.

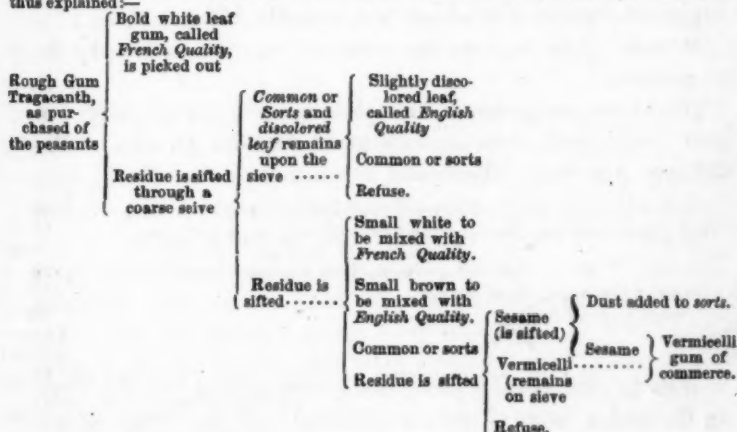
A third sifting takes place with a still finer sieve. The gum which passes through is termed *Sesame Seed*, and the coarser which remains upon the sieve, *Vermicelli*. Both qualities are carefully picked by women. When cleaned, the *Sesame Seed* is again sifted with an extremely fine sieve; and the dust and minute particles sifted out, are added to the *sorts* or *common gum*. The *Vermicelli* and *Sesame Seed* are then mixed together. This mixture forms the *Vermicelli Tragacanth* of commerce.*

When the gums are intended for the French market, the fine white *leaf* only is shipped; the *vermicelli* is sold for Trieste, and the discolored *leaf* and *sorts* for England.

If, however, the whole parcel be worked for England and be required *good*, then the French and English qualities are mixed, and the brown *leaf* which had been left in the *sorts* is also picked out and added. By so doing the value of the *common* or *sorts* is reduced.

I believe it is supposed that more than one plant produces the gum Tragacanth of commerce. For this there is some foundation. In fact, very little gum Tragacanth is shipped to England in the state above described. In order to explain this, I must begin by stating that besides the real gum tragacanth of Anatolia, there are two other kinds of gum collected in Armenia and Caramania from various trees, principally (as I am informed)

*The various siftings and pickings to which gum Tragacanth is subjected at Smyrna, may be thus explained:—



wild almond and plum. That from Armenia is sent to Constantinople from Moussul, whence it derives its name *Moussuli*. That from Caramania is sent direct to Smyrna, and is termed *Caraman*.

The average value of Moussul gum is 10 *piasters* per *oke* of lb. $2\frac{67}{100}$, equal to about £3 16s. sterling per cwt.; Caramania gum is worth *p.* 4 or *p.* 5 per *oke*, or £1 10s. to £1 18s. per cwt.; whereas the usual value of gum tragacanth in its rough state is £10 per cwt.

Both these gums are, I believe, almost worthless, but are paid for at these high prices for the purpose of mixing with gum Tragacanth, and by some are considered to be an inferior kind of the same gum. As neither Caramania nor Moussul gum occur in flaky pieces like tragacanth, and as they are of a dark color, particularly the former, they would be easily detected if mixed with *leaf* gum, without previous preparation. The Jews, therefore, who adulterate all the drugs of Turkey, have found means of deceiving the eye in the following manner.

A quantity of Caramania gum is broken up into small irregular pieces, which are whitened with *White Lead*; the whitened gum is then mixed with *leaf* gum to the extent of 50 per cent. It is prepared in a similar manner for the *vermicelli*, but is pounded into smaller pieces and added only to the extent of 25 to 30 per cent. To adulterate the *sorts* or common gum, the Caramania gum is prepared in a similar manner, but the pieces are left larger: the proportion added is frequently 100 per cent.

Moussul gum is used for adulterating the better kinds of tragacanth.

The average expense of handpicking 1000 *okes* or 2667 lbs. of gum Tragacanth, is at the rate of $1\frac{1}{2}$ *piasters* per *oke*, or eleven shillings per cwt. Thus:—

Labor of men, picking and sifting, 119 days, at piast. 10 per day	1190	0
Picking by women, 130 $\frac{1}{2}$ <i>okes</i> broken leaf gum, at piast. $\frac{1}{2}$ per <i>oke</i>	81	56
“ “ 64 $\frac{1}{2}$ <i>okes</i> Vermicelli, at piast. 1 per <i>oke</i>	64	25
“ “ 20 <i>okes</i> Sesame Seed at piast. $1\frac{1}{2}$ per <i>oke</i>	30	0
Superintendent, 11 days, at piast. 10	110	0
Present to head-picker	25	0
	1500	81

Note by Mr. Hanbury.—[The author having had the kindness to forward a series of samples illustrative of the foregoing notice, it may not be uninteresting here to enumerate them:—

Superior qualities.

1. White picked Yalavatz gum tragacanth.
2. ————— Caissar gum tragacanth.
3. French assorted *leaf*—sample of seven cases.
4. Broken *leaf* picked by women, mixed with fine *leaf*.
5. Broken *leaf* of Caissar gum, mixed with fine *leaf*.
6. Vermicelli as picked out before mixing with *Sesame*.
7. Vermicelli—sample of one case.
8. Very small *leaf*, termed *Sesame*, mixed with *Vermicelli*.

Inferior qualities.

9. Common *leaf* mixed with *English assortment*.
10. English assorted *leaf*—sample of four cases.
11. Common or sorts—sample of two cases.
12. Small refuse, thrown out—almost worthless.
13. Large refuse gum—almost worthless.

Gums used for the Adulteration of Tragacanth.

14. Moussul gum.
15. Caramania gum, first quality, worth £2 10s. per cwt., to be mixed when broken up and whitened, with fine *leaf* and *Vermicelli*.
16. Caramania gum, second quality, worth £1 10s. per cwt., to be mixed when broken up and whitened, with *sorts* gum.
17. Caramania gum, broken into fragments and white lead, for mixture with *English assorted leaf*, in the proportion of 50 per cent.
18. Caramania gum in smaller fragments, whitened with white lead, for mixture with *Vermicelli*, in the proportion of 50 per cent.
19. Caramania gum, whitened with white lead, for mixture with *sorts* and common gum, in the proportion of 100 per cent.

The substances designated *Moussul Gum* and *Caramania Gum* belong to the somewhat ill-defined group described by pharmacologists as *Bassora Gum*, *Kutera Gum*, and *False Tragacanth*.

In a small but interesting collection of gums and gum-resins formed in Persia by W. K. Loftus, Esq., and deposited partly in the British Museum, and partly in the Museum of the Royal Gardens at Kew, is a specimen of our *Moussul Gum*, stated to be the "common *Ketira* of the Arabs, exuded from the *Gawan* or *Gabban* of Persia." Is this plant the *Cochlospermum Gossypium*, De C.?

The *Caramania Gum* appears identical with the *Gomme pseudo-adragante* of M. Guibourt, regarded by that author as the produce of *Astragalus gummifer*, Labill.

Further researches, however, are much required to determine botanically the origin of these substances.

The practice of whitening gum with carbonate of lead is deserving of attention. Mr. Maltass was informed upon his first inquiries on the subject, that the whitening was effected by starch; this, however, proved untrue, and it was afterwards reluctantly admitted that white lead was employed. I can fully confirm the existence of carbonate of lead in the samples No. 17, 18, and 19; and can also state that I have readily detected lead in the adulterated *Small Tragacanth* imported into the London market.

The gum used in adulterating tragacanth can readily be recognized upon careful inspection.—D. H.]

Pharm. Jour. July 1855.

A MODE OF TESTING THE PRESENCE OF PHOSPHORIC ACID IN A SOIL.

By DAVID STEWART, M.D. Chemist of the Maryland State Ag. Society.

Upon three watch glasses, each containing one-tenth of a solution of 1000 grains of soil—place severally $\frac{1}{4}$, $\frac{1}{2}$, and one grain of molybdate of ammonia, and evaporate each to dryness on a water bath. Now add to the contents of each dish, an equal measure, say $\frac{1}{2}$ oz. of nitric acid, and if no yellow precipitate remains undissolved, then no phosphoric acid exists in this sample of soil. If, however, a yellow precipitate does remain, and the half grain dish contains more than the quarter, and as much as the grain dish, then the proportion of phosphoric acid may be calculated, as its relation to $\frac{1}{4}$ gr. is too great, and its relation to one grain is too small; it being necessary to have 30 parts of molybdic acid for every one part of phosphoric acid present in order to the production of the full amount of yellow precipitate, because this yellow precipitate is soluble in any excess of phosphoric acid.

The solution of the soil may be made by throwing upon a glass funnel 1000 grains (or 2 oz.) of soil, and filtering through it nitric acid, until 1000 grains (or 2. oz.) are collected. Rain water may

be substituted for the pure nitric acid in larger proportions, and the solution may be obtained as I have directed in my formula published by Mr. Sands, in the Agricultural report for 1853, p. 153-5, (and which I then copied from my formula deposited in the Smithsonian Institute in 1850.) I have tried the modes of using this reagent suggested by others, and utterly failed to approximate to the truth. Moreover this is by half the most expeditious mode that I have met with, and the only one practicable in the hands of a novice. It is one that I devised several years since, and have used repeatedly in teaching my students. 20 lbs. of phosphoric acid may thus be easily detected in an acre of soil in a few hours.

Baltimore, May, 1855.

American Farmer.

BLACK STAIN FOR WOOD.

By C. KARMRASCH.

The author having learnt from Professor Altmüller, of Vienna, that Runge's black stain, which has been much recommended for some years as an ink for steel pens, furnished an excellent means of staining wood black, was induced to make some experiments, the result of which lead him to recommend it further for this purpose.

The ink in question, which may be readily prepared by any one, is applied to the wood without warming, or any other preparation, by means of a brush or sponge. When dry, the application of the dye is repeated, and three, or at the utmost four applications, produce a deep black color, which acquires the highest beauty when polished or varnished.

The stain may be kept for a long time ; and in simplicity of employment, as well as in the goodness and rapidity of its results, it exceeds the common black wood-stain, which it certainly equals in cheapness. The author has obtained equally good results with the most different woods, such as beech, cherry, poplar, lime, fir, &c.

The best method for the preparation of the chrome-ink, according to several comparative experiments, is the following :—4 lbs. or 2 quarts of boiling water are poured over 1 oz. of pounded commercial extract of logwood, and when the solution is effected, 1 drachm of yellow chromate of potash is added, and the whole well stirred.

The fluid is then ready for use as a writing ink or wood-stain. It has a beautiful violet-blue color, as may be seen from the thin stratum which runs down the glass when the bottle is shaken, but when rubbed upon wood it produces pure black. It may be prepared, even on a small scale, at the price of threepence per quart.

When the extract of logwood cannot be obtained, the preparation is rather more tedious. In this case 4 lbs. of logwood may be extracted by boiling with water for about an hour, and the fluid, separated by decantation and pressing the woody residue, evaporated to about 3 quarts; 1 drachm of chromate potash is then dissolved in it. The author has obtained remarkably good results in staining wood with a fluid prepared in this manner; but when it stands for a time, it deposits a considerable quantity of black sediment, which shows that it might have more water. Indeed Runge recommends a larger quantity both of water and chromate of potash for the preparation of his chromic ink. According to his receipt, 1000 parts of decoction to be prepared from 125 parts of logwood, and to this 1 part of chromate of potash is to be added. Perhaps a proportion lying midway between this and the preceding recipe might be the most advisable for a wood-stain, namely, 4 lbs. of logwood to yield 9 quarts of decoction, to which half an ounce of chromate of potash may be added.

The commercial extract is however to be preferred, as with it the preparation is made very quickly and with little trouble.—*Chem. Gaz. July 2, 1855, from Mittheil des Gewerbevereins für Hannover, 1854, p. 298.*

ALTERATION OF SUGAR DISSOLVED IN WATER.

E. Maumene* has found that cane sugar experiences the same change into uncrystallizable sugar, when kept for a long time in solution, as when heated with acids. A crystal of pure sugar dissolves in boiling potash without any coloration; but a solution of the same sugar after being kept for any considerable time becomes brown when boiled with potash, thus showing that the sugar has undergone change. The progress of this

* *Comptes Rendus*, xxxix., 914.

change is best observed by means of the saccharometer. The dextrogyration decreased most rapidly with a solution of pure sugar, and was less when the solution contained some lime, which appears to retard the change. The rapidity of the change is increased by heat. Glucose or gum do not, under the same circumstances, suffer any alteration. The presence of organic acids was found to exert but little influence upon the alteration of sugar.

From these observations the author concludes—1. That the roots of beet will yield less crystallizable sugar the longer they are kept; 2. That a diminution of crystallizable sugar must result from the method of drying the roots; 3. That the percentage of sugar in old syrups cannot be ascertained by means of the optical test; 4. The brown color produced by heating syrup with potash cannot alone be taken as an indication of the presence of glucose, since the uncrystallized cane sugar presents the same reaction.

When the cane sugar in syrup which is old, or which contains gum, is to be estimated, this must be done by evaporation over lime or sulphuric acid. The cane sugar then crystallizes out, and the point at which the gum begins to dry may be very well observed. When the syrup contains glucose instead of cane sugar, no crystals, or very few, are obtained.—*Pharm. Jour.* July, 1855.*

CHARCOAL AS A MEDIUM OF INHALATION.

By MR. STEPHEN DARBY.

The explanation of the real action of charcoal, in contact with effluvia, for which we are indebted to Dr. Stenhouse, and the application of it in many ways for sanitary purposes, as recommended by him, has naturally given rise to many suggestions for the use of this most important agent.

[We observed this spontaneous change of cane into grape sugar, in a vial of simple syrup kept in our cabinet during six years, when using it in illustrating the reaction of potash on the two sugars. The coloration of the liquid in the cane sugar experiment led us to infer and believe this change had occurred.—*ED. AM. JOURN. PHARM.*]

Among those which have fallen under my notice are one or two that have led me to make a few experiments; and although these are trifling, the results may perhaps be considered worth communicating.

My attention having been called to the advantages offered by charcoal for exhibiting remedial agents, as iodine, &c., in very minute proportions, by inhalation, I was somewhat in doubt whether the affinity of charcoal for iodine—which, according to M. Bechi and M. Magnes, is so strong as not to be overcome by a simple solvent—might not render useless the method proposed, as this would require the iodine to be diffused through the pores of the charcoal in a very finely divided state. The former gentleman, in his practically useful paper on the employment of charcoal as an economical agent for separating iodine from its natural and artificial combinations, detailed in the *Journal de Pharmacie* for July, 1851, states “that neither hot nor cold water removes from charcoal the slightest trace of iodine.” It is the same with alcohol, which one would have regarded as its true solvent; but quite the contrary occurs if we treat iodized charcoal with a substance for which the iodine has a strong affinity, and with which it forms an intimate combination—as with solution of potash, &c.

M. Magnes, a translation of whose paper appears in the *Pharmaceutical Journal* for April, 1852, states—“I intimately mixed together one part of iodine with nine parts of charcoal, only retaining its hygrometric water. The product had neither the odor nor flavor of iodine, and having washed it on a filter, I ascertained that the water that passed through was inodorous and colorless, and that it did not give a blue color to starch paste.”

I first employed ordinary wood charcoal, in the proportion used by M. Magnes (nine parts to one of iodine), and found, as he states, that from the salts of the alkalies and alkaline earths contained in the charcoal it was all converted into iodides of potassium and calcium, with traces of iodates of potash and lime.

I then used charcoal that had been exhausted with hydrochloric acid, thoroughly washed and dried, and treated it with iodine in the same proportion (one part to nine), when I found on triturating the mixture with a small quantity of water, and throwing

it on a filter, that no free iodine was contained in the water, neither could I detect any trace of iodic acid, or any combination of iodine; but on the addition of alcohol to the well-drained charcoal, a densely colored solution of iodine (proved by the usual tests) passed through the filter. M. Bechi is therefore in error in stating that alcohol does not remove it. Although the combination with, or rather retention by charcoal is powerful enough to prevent the abstraction of iodine by water, still it would not appear sufficiently so to cause any objection to its employment for the purpose proposed, should this be thought desirable, more especially as M. Magnes has shown that in drying at a moderate heat in presence of watery vapor, the iodine is in great part given off.

It is of course necessary, for the reason before stated, to use charcoal free from alkalies, alkaline earths, and their salts.

The employment of charcoal respirators has given rise to the objection—not, I think, well founded—that the charcoal would by use become deleterious, owing to its absorption of the carbonic acid given off from the lungs, and also from the formation of this gas by the oxidation in its pores of the volatile carbonaceous matter, or hydrocarbons, given off in small quantities from the same source. To determine if this be the case, I took a certain weight of coarsely-grained wood charcoal, placed it in a percolator, the receiver of which contained a solution of baryta and air that had previously been freed from carbonic acid, and passed a considerable quantity of cold boiled distilled water through the charcoal; only a slight turbidness was caused; this was allowed thoroughly to deposit, the supernatant liquor withdrawn by means of a syphon fixed in the apparatus, care being taken to admit only air free from carbonic acid. The precipitate was twice again washed, allowed to settle, and the water withdrawn, when the precipitate, thrown on a filter, dried and ignited, gave, (deducting the filter ash), 0.55 grains of residue. A similar weight of charcoal in respirators was worn for six hours by three healthy individuals, and treated in exactly the same way as the above; the residue obtained was only 0.33 grains, or somewhat less than that from the charcoal which had not been respired through. In both cases the carbonate of baryta contained only a trace of sulphate. An equal proportion of charcoal, heated to low redness and cooled in

an atmosphere of carbonic acid, when treated in the same manner, caused a dense precipitate of carbonate of baryta; so that the charcoal does not prevent the abstraction by water of the carbonic acid, as is the case with iodine.

If there were any grounds for the objection raised, the second experiment should have shown at least an excess of carbonate of baryta over the first, for, according to Scharling, "a man weighing 170 lbs. gives off from the lungs, in the course of one hour, 33.5 grammes (more than five hundred grains) weight of this gas," consequently a considerable volume must have passed through the charcoal employed. That the reverse is the case is doubtless due simply to the somewhat larger amount of alkaline carbonates contained in the first portion of charcoal.—*Ibid.*

CULTURE OF COCHINEAL IN THE CANARY ISLANDS.

By DR. THEODOR E. MARTIUS.

This costly coloring material, which was formerly obtained solely from Mexico, has, during the last thirty years, become an object of artificial culture. This has given rise to the introduction into commerce of cochineal from Teneriffe, Algeria, and it is probable that it will soon be obtained from the East Indies.

The accounts of the collection and preparation of cochineal are at present very contradictory, and the circumstance that *black* and *silver* cochineal are met with, has especially given rise to very discrepant views.

During the last two years Teneriffe cochineal has come into considerable competition with Honduras cochineal, and it would appear from the following statements more correct to consider this kind of cochineal as the produce of the Canaries. In a very interesting work by Dr. Julius Freiherron von Minutoli,* it is shown that in the year 1853 the culture of cochineal was carried on in the following of the seven inhabited Canary Islands:—

1. TENERIFFE.—The author states that the *niguera chucaba* or *tunera* grows remarkably well on this island.

2. FUERTEVENTURA likewise appears to be situated very favorably for the culture of nopal.

* El Pasado y Provenir de las Islas Canarias. Berlin, 1854.

3. LANZAROTTI.—Here the culture of the cactus is very extended. It grows with great luxuriance and rapidity, and the culture of cochineal is carried on with great success.

4. GOMERA.—Here the attempts to establish this industry have been less successful.

It is likewise stated that the Indian fig grows well upon GRAN CANARIA, but no mention is made of the culture of cochineal there.

In PALMA, the sixth island, the production of silk appears to be more extensively carried on; and in HIEROO, the deficiency of springs may render the culture of the cochineal insect or of cactus impossible.

It is also stated that there are in the Canaries three concentric zones. The first, *costa*, extends about a league from the coast inland, becomes wider when the surface is even, narrower when it is hilly. The intermediate zone, *mediania*, extends as far as the foot of the mountains in the centre of the islands, and the *cumbres* comprises the mountainous districts.

These remarks are necessary, in order to render what follows intelligible; and it may be added that it is D. Santiago de la Cruz who has, with much trouble, introduced the culture of cochineal into the Canaries.

There are several species of *nopal*, *la tunera silvestre* Indian fig, *cactus tuna*, short leaf with numerous thorns, serve only for coloring sugar, fruit, and wafers; and *la tunera amarilla*, with large, yellow, sweet fruit, and round green leaves. The *tunera blanca* is best adapted for the culture of cochineal; but it is inconvenient, on account of its numerous thorns. Lastly, there is a Mexican species with very soft thorns, which is likewise available for cochineal culture.

In planting the *nopal*, land must be selected which is exposed to the sun and sheltered from wind, so that the insects may not be blown off the leaves. The soil must not be close and clayey, but light and porous; so that the roots may easily penetrate downwards, and the moisture be retained within it. The soil may be stony, and the plants may even be set upon the bare rock, if there are any fissures into which the roots can penetrate. When they are planted upon the plain, the soil must be ploughed up at least a foot and a half deep. The plants are set in the furrows at

six feet distance from each other, and with sufficient watering they soon spread out.

In the autumn, strong nopal stems, with large, thick and thorny leaves, are selected. They must be more than a year old; and when they are to be planted in good land, each one must have at least two or three leaves developed. In inferior land one leaf is considered sufficient. The plants are broken off by the hand, and are exposed to the air for eight or ten days, in order that they may cicatrize; and during this period they must be frequently turned over. If they were planted at once they would die. A hole is made in the furrow, the plant stuck in so that it is turned towards the light, and that the wind and rain may strike the leaves only on one side. The lower end of the plant is covered with earth, and, according to the richness of the soil, the plants are set at a foot and a half or six feet apart. When the land in which the plants are set can be irrigated, this may be done about twenty or twenty-five days after setting them. When the weather is dry the watering is repeated at the end of a month. However, the water must not come in contact with the plant, but be led along between the furrows. From 2800 to 3200 plants of nopal are set upon half an acre of land. In December the soil is removed from the plants to admit more freely the access of air, but care must be taken not to go so deep as to injure the roots. At the same time weeds should be removed and manure applied. For this purpose pigeon dung is preferred, and in the absence of it well rotted pig or cow dung. The nopal plants in dry soil only require manuring every third or fourth year. In the spring the soil round the plant is again carefully cleared of weeds, the cobwebs removed from the plants, and a close search is made for an insect which burrows in the leaves or stem. This insect has a form very similar to the cochineal, and is called *cochinella bastarda*. It is very detrimental to the plants, and if not removed would cause them to die. Constant attention to the plants is indispensable. They require to be watered only when there is no rain, and then not more than every fortieth or fiftieth day. Too much moisture makes the fleshy leaves dry, hard, and yellow. As soon as the new leaves shoot out, the fruit buds are formed, and in order that the plants may not be deprived of too much sap, these are carefully re-

moved. They are distinguished from the flattened shoot of the young leaves by their round form.

The cochineal insect should only be placed upon plants three or four years old. During the first year, potatoes or barley may be grown in the space between the furrows, but afterwards this must be discontinued, so as not to interfere with the roots of the nopal.

In autumn the yellow leaves are removed. Good nopal serves for twelve or fourteen years for the culture of cochineal. In the months of March, April, or May, according to the season, the young broods are placed upon the leaves. In warm weather, they are hatched on the seventy-fifth or ninetieth day; in cold weather, ninety-three or one hundred and thirteen days are requisite. Those who are experienced in the matter, believe they can predict the day that the young brood will be hatched. So soon as they begin to move, the mother insects are carefully collected and spread out about an inch apart on boards in boxes. The cochineal are covered with rags an inch wide, and four or five inches long. These rags must not be larger, because when the leaves are overloaded with insects, they remain small and weak. Moreover, the females are then less productive, the leaves are consumed more rapidly, and the expenses proportionately increased. The rags are removed from the cochineal daily, or even more frequently, and when they are sufficiently covered with the young insects, they are carried in a basket to the nopal, each rag laid upon a leaf, and fastened with the thorns. After a few days, when the insects have spread themselves over the leaf, the rags are removed. The opinion that it is better not to place the insects upon the plants for at least six days, appears to be simply founded on prejudice, and is not confirmed by experiment.

Instead of the rags, small bags of muslin are sometimes used; a number of mother-insects are placed in each bag, which is hung upon the nopal leaves until the young are hatched, and the insects have crawled up on the leaves. Many insects are lost in this way, and it has also the inconvenience that the whole brood comes upon one part of the leaf, and their development is retarded.

When the young are hatched, the mother-insects which ap-

pear to be wholly exhausted, are collected and killed. These yield the finest and most valuable cochineal; *mother cochineal*, when dried, is quite black. It is known in commerce under the name of *black cochineal*, *cochineal renigrada*, *grana nigra*, and the pound costs eighteen reals.

It must not be forgotten, that the more leafy the nopal is, the less the insects like it, and for this reason the plants are allowed, just before putting out the young insects, to fade slightly, and are then watered some time afterwards to revive them. The insects become full-grown in fifty or sixty days. The males are very small, dirty-white, and winged; they die immediately after the impregnation of the females. The form of the latter is that of an ellipse divided lengthways; they are from three to four lines in length. The insects remain upon the same spot of the leaves after once settling, and when once removed, they are unable to attach themselves again either there or elsewhere.

In from sixty-five to one hundred and fifteen days, the breeding time of the new generation comes on, and the insects are removed to make place for the succeeding young ones. This is done with a broad knife with rounded end, and a piece of metal attached covering two-thirds of the convex surface, and attached to the handle, which extends a foot and a half in a tongue shape, so that the insects, when removed, fall into the hollow. The insects are detached from the leaf by the tongue-shaped handle, and swept off by the knife into a tin box held in the left hand. It is about five or six inches deep, triangular, and furnished with a handle at one side.

As the value of the cochineal depends upon the size of the insects, the largest are gathered first, and in this way an opportunity is provided for the remaining ones to become larger. The breeding insects are collected from among the larger ones. Their collection requires great dexterity and quickness.

The insects collected are killed daily, and for this purpose they are spread out in layers about an inch deep, upon trays of tin or clay, which are placed in an oven heated to 131° F. Great care must be taken not to burn the insects, or allow them to adhere to the bottom of the tray. When they are all dead, they are put into boxes and exposed to the sun until perfectly dry, and care must be taken that they do not become mouldy.

A more simple way of killing the insects, is to fill clay boxes holding about twelve pounds, and close them tightly for twenty-four hours. Twice the time is requisite when the boxes are smaller or only half-filled. The only objection to this method is, that the drying is difficult and tedious, requiring artificial heat.

Three pounds and a quarter of living insects yield one pound of cochineal. Before being sold, it is sifted through a hair sieve in order to remove the small white pollen (?) which adheres to them. Nevertheless, the insects are whitish-grey when dry, so that they are known in commerce by the name of *silver cochineal*, *cochinella jaspada*. The pound costs sixteen reals.

The productiveness of these insects is very great. The mother-insects are kept in the boxes fourteen or twenty-one days, and the rags are removed full of young once or twice daily, so that the number of young that a female may produce during twenty-four days and without food, amounts to a million.

The Canary cochineal is the next best to the Honduras. Women are exclusively engaged in attending to the cochineal culture. When the season admits of breeding the insects early, the second brood is placed on the leaves immediately after the first. When the winter rains are late, a third crop may be collected, at least in the coast district, for there the insects do not die in December, as they do in the colder regions of the mediania.

The nopal must be kept free from rats and lizards as well as birds.* The produce of an acre of good land planted with nopal, amounts annually to 500 pounds of dry cochineal. In dry land, the crop varies between 50 and 500 pounds.

It would be very serviceable to preserve the insects through the winter in the mediania district, and thus remove the necessity of bringing mother-insects every year from the coast district. Such a protection might be easily effected, by covering the nopal fields with a cane roofing. The following table shows the increased produce and exportation of cochineal from the Canaries:—

* Fowls are very fond of the cochineal insects, and find out the plantations very readily. To prevent their depredations, the inhabitants, who are compelled to feed the fowls of the nobility, tie them by the leg during the day.

Years.	Pounds.	Years.	Pounds.
1831 . . .	7½	1843 . . .	75,964
1832 . . .	118	1844 . . .	88,294
1833 . . .	1,060	1845 . . .	168,109
1834 . . .	1,752	1846 . . .	232,550
1835 . . .	4,561	1847 . . .	296,292
1836 . . .	5,966	1848 . . .	375,585
1837 . . .	7,001	1849 . . .	449,757
1838 . . .	23,112	1850 . . .	782,670
1839 . . .	27,661	1851 . . .	368,109
1840 . . .	66,521	1852 . . .	806,254
1841 . . .	90,919	1853 { In January .	120,499
1842 . . .	69,116	{ In February .	111,331

Thus, in the year 1853, the exportation would probably amount to 1,300,000 pounds, and the value of this, since the increased price consequent on the failure of crops in Honduras, would be £225,000.

Erlangen, April, 1855.

Pharm. Journal, June, 1855.

ON SILICIUM AND TITANIUM.

By H. SAINTE-CLAIRE DEVILLE.

Amongst the compounds of oxygen with simple bodies, there is a group of substances whose analogies are incontestable, and which may be characterized by a single feature in their history. These oxides, which are not acted upon by chlorine alone, become converted into chlorides when in contact with charcoal, under the influence of a current of chlorine at a moderate temperature. Amongst them I shall mention those which will be referred to in this note, namely, silica, titanous acid and boracic acid. The radicals of these generally-diffused substances have not yet been studied in all their details, and I now lay before the Academy the result of my researches upon this subject.

When sodium is treated with chloride or fluoride of silicium in a tray placed in a porcelain tube heated to redness, the last traces of the metal may be removed; and all that is then necessary is to wash the residue, in order to obtain silicium with all the characters attributed to it by Berzelius. But if the portions which do not adhere to the tray be selected, put into a crucible, surrounded and covered with pure fused chloride of sodium, and heated to a sufficiently high temperature for the volatilization of

the greater part of the alkaline chloride, two kinds of products are obtained, which vary according to the temperature and the nature of the flux.

In the first place the graphitoid silicium already described by me* as being obtained from the *fonte* of aluminium, may be produced; fused silicium is also obtained in the midst of a gangue which resists the action of heat; it is then frequently crystallized.

Crystallized silicium has much resemblance in color with specular iron ore when a little iridescent. Its form cannot be exactly measured, the faces of the crystals being always curved; but the form presents so close a resemblance to those of the diamond, that this comparison has been made immediately by all the mineralogists to whom I have shown it. In this state silicium cuts glass.

The analysis of the crystals which accompanied the specimen exhibited furnished the following results;—100 silicium gave 205 of silica; calculation requires 209. The small quantity of matter which was wanting also contained silica and iron, but in proportions which might be neglected. Thus silicium, like carbon, beside which it has been placed in the series of metalloids, is capable of assuming three distinct forms:—

1. The silicium of Berzelius, which represents ordinary carbon.
 2. Graphitoid silicium, which corresponds with graphite, and is obtained under the same circumstances as artificial graphite.
 3. Crystallized silicium, which is the analogue of the diamond.
- Silicium consequently differs from the metals in every respect.

I also exhibit some fused silicium, which has been extracted from different gangues. I cannot, however, state exactly either the temperature, which was very high, employed in this new experiment, or the mode of preparation which is most proper for attaining a certain result. I must observe only that silicium takes up iron, wherever it exists, even in vessels in common porcelain, which it corrodes in a singular manner.† In preparing silicium,

*Chem. Gaz., No. 287, Oct. 2, 1854, p. 362.

†It reacts upon alumina, at least in the presence of bases, furnishing vitreous products, which appear to me to be new, and which I am at present engaged in analysing. The vessels which I prefer are crucibles of coke, calcined and immersed whilst still hot in boiling muriatic acid. After remaining for some time in the acid, and being repeatedly washed, these crucibles are very good.

it is necessary therefore to exhaust every precaution in the purification of the original materials, particularly the sodium; to analyse it, it is put with a few drops of nitric acid into a small crucible of Sevres porcelain, and a very small quantity of pure hydrofluoric acid is added (silicium, when strongly heated, resists the action of hydrofluoric acid and nitromuriatic acid;) it should dissolve entirely, and the liquid, when evaporated to dryness, should leave no trace of ferruginous matter.

Silicium alloys metals, especially copper, to which it communicates a hardness so great that the metal resists the action of the file. This is copper-steel.

Titanium, obtained by exactly similar processes and calcined in crucibles of alumina, is infusible at a temperature which causes the vaporization of platinum; it resembles very iridescent specular iron ore, and crystallizes in prisms with a square base.—*Chem. Gaz.*, June, 1855, from *Comptes Rendus*, April 30th, 1855, p. 1034.

CHEMICAL EXAMINATION OF THE BAKERS' BREAD OF PHILADELPHIA.

By CHARLES M. WETHERILL, PH. D., M.D.

Bread is the most important element of our food, not only for its nutritive properties, but because it is susceptible of adulterations, which, though they may be small in amount, are nevertheless so constantly taken into the system that they cannot fail in the end to prove detrimental to health. We find accordingly a very general prejudice against the wholesomeness of bakers' bread, and the fault is attributed to the use of alum, which is supposed to be the reason that such bread presents a finer appearance than that made at home. Although this is a vulgar error, since such fine appearance is the result of art, and the bread need not contain any different ingredients from that which is home-made, bakers have thrown themselves open to suspicion, for wherever the bread has been examined on a large scale, adulterations have been found present, and, in some places, are of universal use. Mr. Normandy, author of the *Commercial Hand Book of Chemical Analysis*, states in the same work that "bread really pure, that is, made altogether of genuine wheat

flour, is, without doubt, to be found no where in London ;" in all the samples of bread examined by him, with but one exception, alum was detected, and in that exception, like the others, a certain quantity of potato flour or pulp was found.

Liebig in his Chemical Letters* states, that he saw in an alum factory in Scotland, small mountains of finely ground flour of alum for the use of the London bakers. In the same work he gives an explanation of the mode in which alum acts upon the bread, and why it is used by the bakers. When the millers moisten their grain in order to facilitate the grinding and do not subsequently dry the flour, or when the flour is exposed to the moisture of the atmosphere, the gluten acts upon the starch to form acetic and lactic acids, which render the gluten soluble in water, which it is not originally ; the dough from such flour does not rise well, and the resulting bread is heavy and of bad appearance. Several salts act chemically upon the altered gluten of such flour and render it insoluble again, so that the resulting bread becomes white, elastic, light, and as if made from the best of flour, and capable of retaining more water, yielding, consequently, more bread from a given quantity of flour. The salts which produce this effect and which are used more or less as adulterations, are alum, subcarbonate of magnesia, sulphate of copper, and sulphate of zinc. The use of blue vitriol by bakers in the north of France and in Belgium, has been abundantly proved, as may be seen by a reference to Ure's Dictionary. Carbonate of magnesia, if it be not in too great an excess, cannot be regarded as injurious. Liebig has recently made some experiments upon the use of lime water in the baking of bread, and found that five pounds of a saturated solution of lime water for every 19 lbs. of flour, gave a bread of fine appearance, and which he deems more wholesome than if made by any other process, as such treatment supplies to bread the deficiency of lime which places it below peas and lentils in nutritive power.† He proposes therefore to substitute the harmless lime water, which acts in a similar manner, for the injurious adulterations in frequent use.

* P. 541 of Third German Edition.

† Liebig calculated the amount of lime in such bread, and finds it equal to what is naturally present in the seeds of the Leguminosae.

The above mentioned substances being used to make a fair looking bread from damaged flour, and to cause it to retain a greater weight of water, another class containing chalk, plaster, lime, clay, &c., is employed sometimes, but I think rarely here, and which acts in increasing the weight of the bread; these cannot be added to any great extent without injuring its appearance, and are readily detected by the quantity of ash yielded by incineration. Finally, potatoes, starch, &c., are added in some places to the flour, and do not act injuriously to the health, although they diminish from the nutritive power (for relative weight) of the bread, and may be regarded as adulterations when the loaf is sold at the same price as the same weight of pure wheat bread. Salærated with the acids or salts used to liberate the carbonic acid, are only injurious when in excess in the bread; they act economically in affording the carbonic acid which puffs up and renders porous the bread, and which would otherwise have to be supplied by the flour itself by the action of the yeast.

I am not aware whether an extended examination of the bread for adulterations has been made in any of our cities, and it seemed interesting as well as important to ascertain whether we are furnished with a pure article, or if in any other respect an advantage is taken by the bakers over the consumers of bread. It was expected that a careful examination of the bread of 24 bakers taken indiscriminately from all classes of bakeries, and from different parts of the city, would supply the desired knowledge, and I am happy to be able to say, that although adulterations are employed in a very few instances, our bread is generally pure. It is gratifying to learn this, and although manifest reasons prevent publishing the names of these delinquent bakers in this article, there is a law to reach them, and I am ready at any time to give their names to the proper authorities.

[Dr. Wetherill then describes his method of analysis, the details of which we have not space to give. In a peculiar muffle arrangement, heated by gas, the bread after being carbonized, was introduced on a platinum dish and completely incinerated. The ashes were then accurately tested. To give additional certainty to the results, portions of bread were adulterated with minute quantities of sulphate of copper and alum, and then after incineration examined for the bases.]

These analyses were all performed in the same way, in similar vessels, and with measured quantities of the reagents; the same quantity of each of the reagents was treated like the substance under examination, for the avoiding mistakes, and for comparison.

The following table gives the result of the analyses:—

No.	Date, 1855.	Weight in ozs. of 4 cent loaf.	Per centage of		REMARKS.
			Dry bread.	Ash.	
1	January 26,	10.4	64.5	1.29	Pure bread.
2	" 27,	9.78	64.25	1.54	Saleratus—magnesia.
3	" 28,	12.65	61.8	0.89	Saleratus—magnesia.
4	" 12,	10.12	56.69	0.79	Principally the crumb.
Id.	" 15,	9.87	62.8	1.11	No. 4 was the bread used for the preliminary experiments. It was perfectly pure with the exception of some magnesia, which I am not certain, from its quantity, whether it was purposely added.
Id.	" 22,	9.9	63.5	1.28	
Id.	" 24,	9.4	63.05	1.05	
Id.	" 25,	9.9	63.2	1.29	
Id.	" 30,	9.98	63.0	1.13	
Id.	February 1,	9.44	63.4	1.22	
Id.	March 5,	9.78	61.9	1.25	
Id.	" 6,	10.1			} Alum found in this bread in two samples.
5	January 19,	11.25	64.95	1.19	
Id.	" 31,	10.06	64.05	1.37	Copper detected.
6	February 2,	8.6	59.5	0.89	Saleratus—magnesia.
7	" 3,	8.0	63.1	1.42	This was the finest bread of the lot and perfectly pure.
8	" 5,	10.47	63.3	1.29	
9	" 6,	10.91	65.5	1.62	Much magnesia.
10	" 7,	10.4	61.8	1.26	Saleratus—magnesia.
11	" 8,	11.34	62.0	1.36	Saleratus.
12	" 9,	10.35	63.8	0.98	Saleratus.
13	" 10,	9.8	63.9	1.33	Saleratus.
14	" 12,	9.49	61.1	1.36	Magnesia.
15	" 13,	11.32	64.2	1.39	Saleratus—magnesia.
16	" 14,	10.49	63.9	0.75	Saleratus—magnesia.
17	" 15,	10.94	61.5	1.26	Alum and saleratus.
18	" 16,	10.64	63.95	0.97	Saleratus.
19	" 17,	11.1	62.5	1.21	A little saleratus.
20	" 19,	8.69	64.45	1.13	Saleratus.
21	" 20,	10.49	62.05	0.89	Saleratus.
22	" 21,	9.05	65.9	1.19	Saleratus.
23	" 22,	12.43	63.0	1.28	Saleratus.
24	" 23,	9.72	65.1	0.76	Saleratus, also magnesia.

It will be seen, that *alum* was detected in Nos. 5 and 17, and *copper* in No. 6.—*Journal of the Franklin Institute.*

RESEARCHES ON ACONITE.

By PROF. SCROFF, (of Vienna.)

Prof. Scroff arrives at the following results, viz:—

1st. All the varieties of aconite having a blue flower, may be reduced to two principal species, viz: *Aconitum napellus*, *Lin.*, and *Aconitum variegatum*, *Lam.*, which comprises *Aconitum cammarum*.

2d. The plants belonging to *Aconitum napellus* and its subspecies are much more active in all parts than those which are

attached to *A. variegatum*. This applies to the wild plant as well as to the cultivated, whatever be its place of growth.

3d. The wild plants of either species, contain more of the active principle than the cultivated plants. *A. storckianum*, cultivated by M. Reichenbach, in gardens, had but a slight activity as demonstrated by the physical properties of the fresh and dried plant, and especially by physiological experiments.

4th. All parts of the plant are active; nevertheless, the root is the most energetic, young or old; then comes the herb before flowering; and the seeds which are least active.

5th. The herbaceous portion of the aconite plant, has the most energy just before the latest flowers, yet at that time the root is at least six times more active.

6th. Carefully dried, and kept from contact with moist air, the herb preserves its activity a long time, if it has a fine green color; but if it is moist, it loses its activity, and acquires by drying a dirty color.

7th. Extracts obtained by the inspissation of the fresh juice are a great deal less active than the alcoholic extracts, which represent all the activity of the plant, and it may be said that the aqueous extract is found to bear relation to the alcoholic in this regard as *one to four*.

8th. Aconitine represents the narcotic property of aconite, but this contains, besides, an acrid principle which has not yet been isolated, and which exists in sufficient quantity to cause an inflammation, to a great extent, of the alimentary canal. Aconite consequently merits to be placed among the acro-narcotic medicines and poisons.

9th. Aconite in general, and especially aconitine, applied exteriorly on the eye, or given internally in sufficient quantity, produces a dilatation of the pupil, a result in opposition to the opinion generally held by pharmacologists.

10th. Aconite as well as aconitine, given internally, appears to have a special and elective action on the trigeminal nerve; they produce in all parts animated by the ramifications of this nerve, peculiar and often painful sensations.

11th. Aconite and aconitine, given in sufficient quantity, produces in a healthy man and in the rabbit an extraordinary augmentation of urine.

12th. Aconite and aconitine exert a strongly depressing action on the heart and on the large vessels, either immediately or following a short acceleration of the movement of the heart. This effect is continued, and differs consequently from that observed from atropia and daturia, which, given in doses larger than aconitia, causes an acceleration of the pulse much beyond the normal state, but preceded by a short slackening.—*Repertoire de Pharmacie, Aout, 1854.*

ON HOWARDIA FEBRIFUGA.

By H. A. WEDDELL.

Among the genera published in the monograph of Cinchonas, there was one, to which, by mistake, I applied a name belonging to a plant of a different family. To avoid this reduplication, I have attached a new name to my plant, and have, as it appears to me, done but an act of justice to an excellent quinologist, who has published in England, a judicious and profound treatise on the Cinchonas, collected by José Pavon and devised by Lambers to the British Museum.

I propose then that the genus described by me, under the name of *Chrysoxylon*, should now bear that of *Howardia*, in honor of Mr. J. Elliot Howard.

I collected the specimens which form the foundation of this genus, in the Bolivian province of the *Cordillera*, during my journey from Santa Cruz to the Sierra Tarija. While searching for the trees producing the Cinchona barks, the curate of Gutierrez, capital of that province, offered to show me one of these plants, which, he told me, grew in the neighboring forest. I followed him with eagerness, and we soon reached the place where he supposed he had seen it, but it was not to be found. I pointed out to him a tree of the same family as the Cinchona, as perhaps the one meant, which conjecture was soon verified, by his expression of astonishment at my art of divination. The tree had unfortunately, some time since, lost its flowers; its fructification was at the same time so far advanced, that I could collect some aborted seed only, which led me into error as to the tribe to which the plant belonged.

A more recent examination of the subject, by calling my at-

tention to some of the Rubiaceæ with capsular fruit, which I had before neglected, revealed to me the true affinities of *Howardia*, of which the absence of flowers had caused a misconception. I became certain that my plant was congener of that described by De Candolle, under the name of *Calycophyllum tubulosum*; that species and mine not only being generically distinct from *Calycophyllum*, but properly belonging to another tribe.

HOWARDIA.—*Chrysoxylon*, Wedd.; *Hist. Nat. Quinq.* 100. *Calycophylli* spec., D. C. Prodr. iv. 403.

Trees and shrubs of tropical America.

Howardia febrifuga.

Chrysoxylon febrifugum, Wedd.; *Hist. Nat. Quinq.* p. 100. A tree of from ten to sixteen feet in height, and two and a half to four inches in diameter. Its bark externally (dried) with a cork-like epidermis, sulcate clefts, and a grayish brown color, internally of an intense yellow.

Found in the province of Bolivia called *Yungas*, and in the vicinity of *Santa Cruz de la Sierra*.

Mr. Howard has met this bark in commerce in England, and presented specimens to the Museum of Natural History of Paris. It is in the form of small scale-like plates deprived of epidermis, of four to five centimetres, (1.375 to 1.769 in.) by one to two millimetres, (.03937 to .07874 in.) in thickness; the pieces are of yellow, approaching orange within, where their surface is fibrous, and exhibit, externally, a vinous color and somewhat cellular surface. Mr. Howard has examined it chemically, and established the presence of a new alkali, to which we may give the name of *howardin*.

The bark treated by this experienced operator furnished him a brownish yellow powder, 40 parts of which dissolved in 100 of boiling water; the decoction, which was a golden yellow, became clouded by cooling. A small quantity of starch was detected in it. In the clear liquor there was found ten per cent. of the weight of the bark of coloring matter united with lime, one per cent. of gum and one per cent. of an alkali soluble in ether, restoring to blue the reddened vegetable blue, and finally soluble in acids, from which it was precipitated by alkalies in the form of hydrate, similar in appearance to cinchonine. In no

other respect, however, did it appear to agree with the alkalies of the true cinchonas; and when submitted under the microscope to the tests pointed out by Herapath, it exhibited none of the remarkable peculiarities which are noticed with quinia, cinchonina and quinidia. The acetate crystallized under the microscope, but exhibited no phenomena of polarization.

It is not, however, to this alkali that the bark of *Howardia* owes its medicinal properties, but rather to another substance which forms nearly twelve per cent. of the weight of the barks. This is soluble in alcohol, but not in ether; has a feeble alkaline reaction, and seems to be combined with a very characteristic coloring matter; a coloring matter which may be united to oxide of tin, and which, when isolated by sulphuric acid, forms with alcohol a brilliant yellow solution, becoming brown by evaporation and exposure to the air. In the latter case it undergoes a true oxidation, and gives rise to phenomena which indicate the presence of several different substances. There appears, however, to be one only which produces, in its different stages of oxidation, all the different shades between golden yellow and brown black, which is remarked in this bark. The sixty parts of the bark which were insoluble in boiling water, when treated by ammonia yielded about one-tenth of its weight, and the residue boiled in water and hydrochloric acid, furnished, in addition, four parts of coloring matter in combination with lime.

The woody matter remaining gave, by incineration, a considerable proportion of lime and magnesia, with some traces of potassa and soda.

The alkali and the bitter principle appear to have the same relations as biberine and siperine from the Greenheart bark, (*Nectandra Rodiaei*.) It may, perhaps, be that the bitter principle is a compound, a fact which it is not yet possible to determine on account of the small amount of the bark which has been submitted to examination. The taste of the alkali is bitter, with an after taste of astringency which is likewise found in the other principle.—*Ann. des. Scien. Nat.* iv. Ser. t. 1, No. 2.

ON ORGEAT SYRUP.

By M. CAPDEVILLE.

Take of Sweet almonds,	500 grms.	=	16 ounces Troy,
Bitter almonds,	250 "	=	8 " "
Sugar,	3000 "	=	96 " "
Water,	1600 "	=	51½ " "
Distilled cherry laurel water,	15 "	=	½ a fluid ounce.
Distilled orange flower water,	230 "	=	8 " "
Exterior rind of lemons,			No. 3.

The almonds are blanched and reduced to a fine paste in a marble mortar, adding, during the process, one twelfth of the water and 16 ounces of sugar. This operation terminated, the author makes an oleo-saccharum, by bruising the lemon rinds with 16 ounce more of the sugar. He then incorporates this oleo-saccharum little by little with the paste, adds the remainder of the water with trituration, strains with strong expression, and adds to the emulsion the remainder of the sugar, and dissolves it at a temperature which should not exceed 104° Fahr., so as to avoid the coagulation of the albumen. Finally the distilled waters are added, immediately after straining:

Remarks.—It is important that the rind of the lemons be deprived of their parenchyme, because the citric acid it contains will coagulate a part of the albumen in the syrup, and injure its consistence. With the proportions above indicated, and with the distilled waters added, the author has always obtained a very emulsive syrup, which keeps well without separating.—*Repertoire de Pharmacie, Janv., 1855.*

PREPARATION OF ANILINE.

By M. A. BECHAMPS.

The author believing that this artificial alkaloid will, ere long, become a therapeutic agent, and interesting therefore to pharmacutists, offers the following formula of M. Bechamps, for its preparation, which is both economical and elegant.

Into a spacious retort, introduce 1 part of nitrobenzile, 1.2 part of iron filings, free from rust, and 1 part of strong acetic acid, free from mineral acid. The quantity of acetic acid should be such that the iron will be completely submerged. Very

soon, without heating, the reaction commences and becomes very active, the temperature rises, the liquid enters into ebullition, and all would be lost but for the refrigerated receiver, which should previously be attached. The result of the reaction is aniline, acetate of aniline, and a little nitrobenzile, that escapes reaction. When the retort has cooled, the contents of the receiver are returned to it. Heat is then applied, and distillation continued to dryness, aniline continuing to pass until the last moment, which can be proved by the blue coloration, occasioned by chloride of lime when brought in contact with it.

To the distilled product, add an excess of concentrated solution of caustic potassa; hydrated aniline separates and comes to the surface, and is deprived of moisture in the usual manner. The base is thus obtained sufficiently pure. It becomes a solid mass with muriatic and chlorohydric acids, if moderately concentrated, and the salts obtained dissolve completely in water.

This method of preparing aniline will permit it to be made in an illustrative course, and thus demonstrate the instantaneous passage of nitrobenzile to the condition of a powerful base.

The author suggests that it is hardly necessary to state, that acetate of iron affords an easy means of distinguishing oil of bitter almonds, which has been adulterated with nitrobenzile, from the pure oil.—*Repertoire de Pharmacie*, 1855.

FALSIFICATION OF CREAM OF TARTAR WITH SUGAR OF MILK.

By M. G. BLENGINI.

The author, after giving a general view of the adulterations which have been heretofore noticed in this drug, states, that his attention was directed to a sample of cream of tartar, of very beautiful appearance, which was considered to be of the best quality. It was in the form of a white powder, inodorous, cracking under the teeth, and having an acid slightly sweetish taste.

In trying the solubility of this salt in cold water, its impurity was readily inferred from the smaller quantity of that fluid required for its solution, viz., 97 parts instead of 184. Treated with arsenious acid, this cream of tartar was colored brick-red, and yielded mucic acid by the action of nitric acid; these tests,

in connection with its sweetish taste and greater solubility, led to the detection of its identity with sugar of milk or lactine.

M. Blengini observes, that the cost of cream of tartar is to that of sugar of milk as 425 to 195, and hence the reason of its employment.—*Giornale di farmica, &c., di Torino, and Repert. de Pharm.*

REMARKS ON ASCLEPIAS VERTICILLATA, AS A CURE FOR THE BITES OF VENOMOUS SNAKES AND INSECTS.

By JAMES C. HARRIS, M.D., Wetumpka, Ala.

This plant, more familiarly known in this vicinity as snake weed, or *Fitzpatrickana*, may generally be found growing in a light grey or red soil, upon the uplands, throughout the States of Alabama, Mississippi, Arkansas and Missouri, and in some portions of Georgia, Louisiana and Florida. It flowers throughout the months of July and August, and may be readily found in the above localities where the forest growth is scrubby oak and hickory, or in the pine barrens among the white oak runners. It has a succession of white flowers from an eighth to a quarter of an inch in length, *each one resembling almost exactly the tooth of a snake*. It is perennial, and varies in height from 15 inches to two feet, with a fibrous root and jointed stem.

[The following specific description is taken from Eaton's Botany, viz: "*Asclepias verticillata*, Michaux. (Dwarf milk weed, flowers green and purple and white, blooms in July), stem erect, very simple, marked with lines and small pubescence; leaves very narrow linear, straight, glabrous, whorled, scattered; horn of the nectary exsert.—ED. AM. JOUR. PHARM.]

Dr. Harris observes that this plant was first introduced as a cure for snake bites in Pike County, Alabama, in 1824, by Caldwell Eastis, a white man, who had resided with the Choctaws, Cherokees and Creek Indians for forty years preceding, who taught him its value in the year 1804-5 when he first witnessed its effects on a horse bitten by a rattlesnake. The usual manner of preparation and administration is as follows: Take and slightly bruise five or six of the entire recently gathered plants, (stem, top and roots) put them in a pint of spring water or sweet milk, and boil down to three gills. This is the ordinary dose for an adult, and is diminished proportionably for children, and

given three times a day. The first dose generally gives immediate relief, and the others are merely given by way of precaution. After the dose is swallowed the remaining boiled plant is to be applied to the bitten part as a cataplasm.

The immediate effect on the system appears to be that of a powerful *anodyne sudorific*, arresting the nausea and vomiting, and giving instantaneous relief to the pain, to be speedily succeeded by free perspiration and gentle slumbers. Shortly after swallowing a dose, an agreeable sensation of warmth is felt throughout the entire frame, commencing in the region of the heart and extending to the surface and extremities. The stomach, no matter how irritable, scarcely ever rejects the remedy, and if it does never more than once or twice.

Dr. Harris states that it has been used in *forty* cases of snake bite in his neighborhood with entire success, and that it proves equally successful in *spider* bite. He hence offers that it would prove successful as an antidote to all animal poisons, even "*hydrophobia*."—*Southern Medical and Surgical Journal*, July, 1855.

ON THE SPONTANEOUS DECOMPOSITION OF BELLADONNA LEAVES.

BY NORBERT GILLE.

It is well to observe, says M. Gille, that the leaves referred to in the following observations were not old, but had been collected and dried according to the rules of our art, and had been placed afterwards in a glass stopped bottle, among the drugs, and had been often opened in the course of business, and doubtless not always hermetically closed.

Well dried at first, these leaves gradually reabsorbed humidity every time the bottle was opened as long as the hygrometric state of the external air exceeded that of the bottle. Under the influence of this moisture a reaction soon commenced, a mixed odor of mould and ammonia occupied the interior of the bottle, and then moist reddened litmus paper, suspended in the air of the bottle, is quickly changed to blue, and a rod moistened with chlorohydric acid held to the mouth of the bottle gives off abundant white vapors of muriate of ammonia.

This production of ammonia depending on nitrogenous principles in the leaves, of which atropia is one, this alkaloid should disappear in part or altogether, as it is known to change easily into ammonia and another odorous base, very soluble in water (the atropine of Berzelius), when placed under similar conditions. For the rest, when belladonna leaves putrify like other organic matters,—and the instance above is a commencement of putrefaction,—it is probable that the alterations which then occur do not respect the salts of atropia, and even if they did, the changes which have supervened must injure the medicinal quality of the drug.

The author believes that these alterations occur frequently in the shop without its being perceived, because the leaves are not preserved in close vessels so as to retain the gases that may develop. He also believes that similar metamorphoses supervene during the desiccation of leaves when the process is effected too slowly, and incipient fermentation ensues.—*Repertoire de Pharmacie*, Feb., 1855.

WOORARA, OR SOUTH AMERICAN ARROW POISON.

By JOHN W. GREEN, M. D.

Dr. J. W. Green, of New York, in a long letter in the New York Medical Gazette for July, gives an account of this poison, and of a series of experiments made with it by himself and Dr. Brainard, at Paris, proving that iodine possesses antidotal powers when brought in contact with this poison in a wound.

De la Condamine, on his return from South America, in 1745, brought this poison to the notice of the French Academy, and was assisted by Van Swieten in studying its effects at Leyden. It appears to be "an extract made of the juices of certain plants," and that made by the Ticunas is said to embrace thirty varieties.

Bancroft, in 1769, obtained the following recipe from the Accawan tribe of Indians, which would be rather difficult to compound, viz:

Take of the bark of the root Woorara	-	6 parts.
" " " Worracobba	-	2 "
" " " Couranopi		
" Bakiti and Hotchyboly, each	1	"

These are finely scraped, put into a pot, covered with water, then placed over a slow fire. When it has simmered for a quarter of an hour, the juice is to be expressed by the hands, taking care that the skin be unbroken. The bark being now useless, is thrown away, while the juice is evaporated, by means of a moderate fire, until it has acquired the consistence of tar. These Indians now take flat pieces of wood, called Cokarito, and dip them into the mass, which adheres strongly when cold. In order to preserve them, they are placed in hollow canes, closed at both ends by skins. When wanted for use the poison is dissolved in water and the points of the arrows moistened with the solution.

Dr. Green first used a specimen obtained from M. Flourens by Prince C. L. Bonaparte, at his request. The second lot, and which was chiefly used, came about 1835 from Mr. Smith, U. S. Consul at Para, to Dr. Green. It was in a small half-pint gourd, which was about half full of a solid, black or brownish substance, having a resinous aspect, and soluble in water and alcohol to a certain extent, facilitated by heat. It was kept in New York without special care, as a curiosity, until in 1853 Dr. Green, then in Paris, obtained a quantity for experiments. M. Vulpian, of Paris, also used some of this specimen and found it very active.

The opinion which had obtained, that woorara was not a poison when introduced into the stomach, has been, in part, disproved by Dr. Green and others, although its action is less rapid in that way than by direct introduction into the circulation.

The experiments of Drs. Brainard and Green were made with guinea pigs and pigeons. They found a centigramme (1-7th of a grain) would kill a pigeon, and two and a half centigrammes a guinea pig, in three minutes.

The preparation of iodine used as a counterpoison was iodine one part, iodide of potassium *two* parts, water 48 parts. This mixture, after being heated to the temperature of the body, was injected under the skin of the animals mentioned without any ill effects. When a poisonous quantity of the solution of woorara was mixed with five times its bulk of this iodine liquid, the whole was injected under the skin of a guinea pig without its causing any ill effects.

From the numerous experiments detailed, the authors draw the following conclusions :

1st. That the solution of iodine and iodide of potassium is in certain limits a perfect antidote against the woorara ; mingled with this poison in solution it destroys its venomous effects.

2d. The solution of iodine injected immediately after the solution of woorara, neutralizes completely the poisonous effects, provided that a cup is applied, in order to arrest the circulation long enough to permit the iodine to join the poison. It does not produce suppuration, nor loss of substance by gangrene.

3d. The iodized solution applied upon the surface of a deep wound of the muscles, into which has been introduced the woorara, destroys the effect of the poison.

New York Medical Gazette, July, 1855.

ON THE PREPARATION OF RENNET AND WHEY.

By M. BOURGAREL, Pharmacien, &c.

Since the year 1823 that I have pursued pharmacy, I have experimented with all the known processes for making whey with acetic, citric, tartaric and sulphuric acid, &c., but none of them has afforded me results so satisfactory as that made with rennet, and after this long experience I now publish the following formula :

Rennet.

Take of Dry White Wine (Sherry or Madeira) 1 litre.

Common Salt, pulverized . . . 12 grammes.

Rennet of the kid, calf, or lamb, dried

and cut in small pieces . . . 15 grammes.

Macerate them for at least fifteen days, and agitate them from time to time, and filter into several bottles, which should be well filled and closely stopped, for use.

When put in a cool place, this rennet can be preserved during two years. I have never attempted to keep it longer.

Whey.

Take of Fresh Cow's or Goat's Milk . . . 1 litre.

Rennet solution, as above . . . 12 grammes.

Mix. In spring or summer the milk is immediately curdled, but if it is winter and cold, it is necessary to warm the milk

slightly, else it will not coagulate; or what is better, warm the mixture of milk and rennet gently.

On the other hand—

Take Cream of tartar	2 grammes.
Sugar	12 “
Dried albumen	2 “

(or better, half the white of an egg.)

Put the curded milk in a saucepan, cut it up with a spatula, and, by means of a gentle fire, heat till the casein separates from the serum, which requires about 104° Fah. The whole is thrown on a strainer or cullender to drain. The crude whey is then put in a silver or well cleaned copper vessel, the particles of casein that float removed with a skimmer, and then heat by a quick fire, add the sugar, and when nearly boiling introduce the cream of tartar, and after it rises throw in the albumen, previously beaten with a little cold water or old whey; allow the liquid to boil up a second time, and then immediately remove it from the basin to a filter previously moistened with boiling water.

Repertoire de Pharm., Mai, 1855.

AN INVESTIGATION INTO THE FACTS AND THEORIES OF FERMENTATION AND PUTREFACTION.

By Henry Pemberton, Practical and Analytical Chemist.

[The above essay appeared in the May number of the Medical Examiner, but being too voluminous for transfer to our pages entire, we give an extract which more particularly embraces the experimental observations of the writer.—ED. AM. JOUR. PHARMACY]

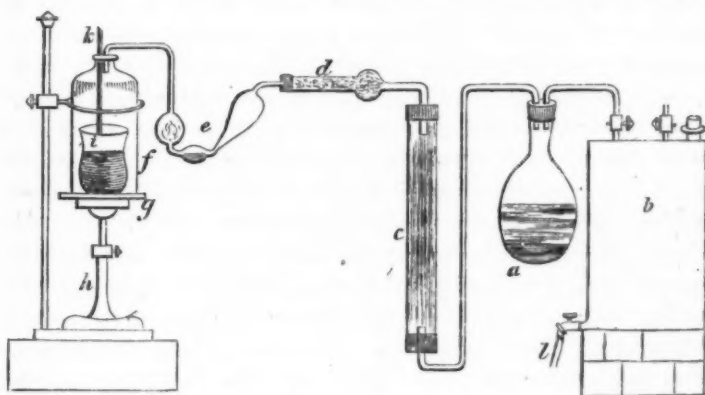
Schröder and Von Dusch* have lately given the details of experiments tried by them upon the effects produced by filtered air upon fermentation, etc. They have established the fact, “that when air is passed through a tube filled with raw cotton, moderately compressed, it becomes incapable of inducing fermentation or putrefaction in substances that would rapidly un-

* Liebig's Annalen, 1854, and Medical Examiner, June, 1854.

dergo these changes if common air was substituted. Thus, meat, broth, wort, etc., were preserved for weeks in flasks, in which they were boiled, a constant current of filtered air being drawn through the flasks. No change of any kind was perceptible, even in summer weather. When milk was tried in the same manner, however, it became sour nearly as soon as in the open air, thus indicating an essential difference in the principles involved in the respective decompositions." The author has himself repeated the experiment of preserving boiled meat and water in a flask, having an aperture of at least one inch diameter, closed merely with a plug of raw cotton, part of the cotton being formed into a ball, surrounding the neck of the flask, and confined with a thread, to prevent the passage of air between the sides of the aperture and the plug of cotton. Meat broth, thus prepared, was found to be perfectly sweet and unchanged in every respect, after the lapse of six weeks, in the months of June and July; a portion of the same broth placed in a bottle with a glass stopper, became so offensive on the third day as to require its removal.

These results above mentioned, appearing to establish the theory, that all fermentations, etc., are induced by the presence in the air of the germs of organic life, led the author to make the following experiments, with the two-fold purpose; 1st, of deciding whether this property possessed by cotton was peculiar to it alone and due to its structural arrangement, or whether it was common to it and to all other finely divided substances; and 2d, the hope of detecting in the air these invisible germs, or at least of obtaining satisfactory proof of their existence. The apparatus made use of was essentially that of Schröder and Von Dusch, with merely such alterations as the purposes in view required. It consisted of the flask *a*, of about one quart capacity, in which was placed the liquid experimented on, closed tightly with a cork, through which passed two glass tubes, one connecting with the five gallon tin cannister *b*, the communication with which could be intercepted at pleasure by a stop-cock, the other leading to the lower end of the filter tube *c*, a glass tube, $1\frac{1}{2}$ inches in diameter and 18 inches long, closed at both ends by corks; a diaphragm of fine copper wire gauze was placed a little

above the lower cork ; through the upper cork was inserted the bent limb of the drying tube *d*, containing fragments of dried chloride of calcium, the other end of the drying tube, connected with the nitrogen bulb or washing apparatus *e*, containing about $\frac{1}{4}$ ounce of water ; from this a tube passed to the bell glass *f*, through the cork at top, through which also passed another straight tube *k*, reaching to the centre of the bell glass, for the purpose of admitting air. The bell glass was closed at the bottom by a plate of ground glass *g*, supported upon a sliding support *h*, kept at any desired elevation by a set screw ; within the bell glass was placed a beaker glass *i*, resting upon the glass plate *g*, so that it could be removed at pleasure. Into this beaker glass was poured an infusion of malt, (wort,) similar to that in the flask *a*. The tin cannister *b*, was provided with an opening through which it could be filled, and capable of being closed air tight ; at the bottom was a discharge cock *l*, leading into a suitable receiver. It is evident that, if the joints of the apparatus are all closed air tight, (the cannister being filled with water,) and the cock *l* opened to permit the escape of the water, a current of air must enter through the tube *k*, into the bell glass *f*, and from thence pass through the washing tube *e*, the drying tube *d*, the filter tube *c*, and the flask *a*, containing the experimental liquid, and finally into the cannister *b*, supplying the void created by the escape of the water. The substance selected for

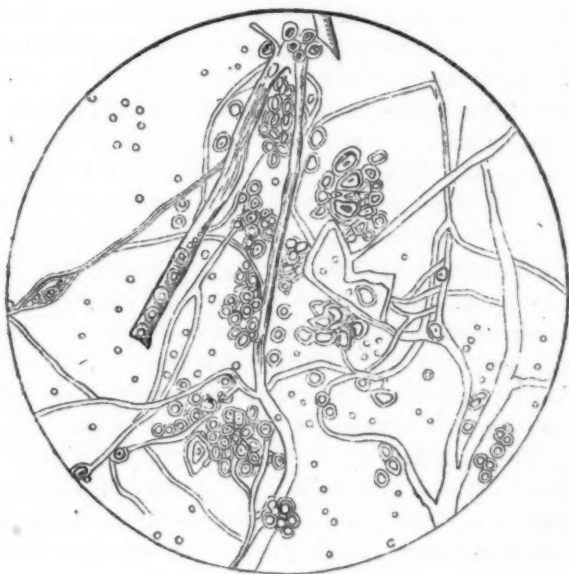


the filtering medium was pure white sugar, in grains of the size

of fine sand, all coarser and finer particles being removed by sieves of different sizes. It was chosen as being better adapted to this purpose than nearly any other substance, being readily obtained pure and clean, possessing an uniform composition, ready solubility and absence of color; it could also be heated to 212° F. without injury to its physical properties. The washing tube and water were used to prevent any organic matter, dust, etc., being mixed with the sugar in the filter tube, the presence of which might lead to errors in the subsequent examinations. The air was dried after leaving the water by the chloride of calcium, in order that no possibility might exist of the germination of the sporules favored by the moisture, that would otherwise be carried into the sugar, and which, if it had taken place, might cause them to vegetate, and thus transmit the germs from particle to particle, until finally carried over by the air into the flask *a*.

On the 30th Nov., 1854, $\frac{3}{4}$ pint of warm ale wort, fresh from the brewery, was put into the experimental flask *a*, and about six ounces of the same into the beaker glass *i*, about the same quantity also poured into a bottle and left exposed to the air. The filter tube was now filled with the sugar, previously heated in an air bath to 212° for 30 minutes. The joints now being made air tight, the contents of the flask *a* were brought into ebullition, which was continued until the tubes leading to the filter and to the canister were heated throughout. The stopcock *l* was now opened, and the water permitted to escape drop by drop, the air entering through the tube *k*, and passing through the whole apparatus to replace it. The water was allowed to run out at the rate of four gallons in 24 hours, being renewed once a day; of course the same quantity of air would pass through the flask *a* within that time; the temperature of the room 65° F. On the 4th of December the liquid in the open bottle was covered with bubbles, and a very thin pellicle formed on the surface. The contents of the flask *a*, and of the beaker glass *i*, remained unaltered. Dec. 5th. The liquid in the beaker glass showed a little mould on the surface. Dec. 6th. The mould was very perceptible in the beaker glass; a few globules were visible in the liquid when under the microscope. Dec. 9th. The liquid in the beaker glass had apparently passed through the alcoholic fermentation and become very acid, smelling strongly of vinegar; it was full

of vibriones and covered with a thick mould. The experiment flask *a*, remained perfectly clear and with no appearance of mould or fermentation. The air was drawn constantly through the apparatus, in the manner described, from the 30th of November until the 23d of December. It was then allowed to remain at rest until the 25th of January, 1855, no appearance of decomposition having occurred in the flask *a*; the washing and drying tubes *c* and *d* were disconnected, so that the air entered from the atmosphere immediately into the filter tube; this was done to make certain that the effects produced were not caused by the water or by the chloride of calcium. The air was now again drawn through as before, on alternate days, until February 26th, when the operation was concluded. On examining the water in the washing vessel *e*, it was found to be reduced by evaporation to about one drachm; it was perfectly colorless and transparent; suspended in it, however, there was a flocculent mass of the size of a pea, colorless and resembling very fine raw cotton; it was possessed of great tenacity, although of the most delicate structure. Under the microscope, the liquid was found to be filled



with extremely minute circular globules, requiring great attention to distinguish them, resembling the globules of the *Penicillium glaucum*, although much smaller. The flocculent mass above mentioned was resolved into a vegetation of the utmost beauty and regularity, consisting of extremely delicate fibres interlacing with each other and covered in parts with sporules and globules. The plant resembled somewhat the *Penicillium glaucum*, but was far more delicate in its structure, and did not appear composed of globules extended longitudinally, forming cells, as is the case in the latter.

When a portion of the clear washing liquid was placed in a bottle with 10 per cent. of fresh sugar, a new flocculent deposit formed in a few days, possessing the general characteristics of that above described. A portion of the sugar from the top of the filter was next examined, but the most rigid scrutiny failed to detect any organic structure, either in the sugar in grains or in the solution obtained by dissolving it in 10 times its weight of distilled water. Another portion was then dissolved in the same amount of water, and placed aside for several weeks, but no trace of globules or other organisms could be found. The examinations and drawing were all made with a Powel & Leland's microscope, $\frac{1}{8}$ in. objective, and highest power of eye piece, giving a magnifying power of about 800 diameters.

When the flask *a* was opened, on the 26th of February, it presented all the properties of the original wort, being perfectly sweet, having a very slight acid reaction, and the odor and taste of fresh wort. On being subjected to distillation, the distillate obtained was neutral, possessed the character and smell of fresh wort, and, by treatment with bichromate of potash and sulphuric acid, proved the entire absence of alcohol. During the whole time this experiment was proceeding, the temperature was never below 65°, sometimes 75°, averaging over 70°.

At the completion of this experiment, a small clean bottle was filled with the still sweet wort from the flask *a*, and tightly corked. The next day it was found covered with froth and in brisk fermentation. The remaining contents of the flask were left therein, and closed with the cork through which the two glass tubes passed, thus affording an uninterrupted communication with the atmosphere through the tubes. At the end of the week

the liquid was but little changed, having merely a musty smell; no mould was perceptible. The flask was now agitated, to expel the air contained therein and replace it with fresh air; the next day it was found covered with a thick growth of *Penicillium glaucum*, was strongly acid, had a putrid odor, and underwent rapid putrefaction.

On the 23d of November, one week previous to the above mentioned experiments, a portion of wort was placed in the apparatus, arranged as just described, the conditions being exactly the same as in the last experiment, excepting that the sugar was not heated previously to being placed in the filter tube. On the fourth day of the operation fermentation commenced, alike in the beaker glass and in the experimental flask *a*; a thick formation of mould covered the liquid; the process was then interrupted and commenced anew as previously described.

This result clearly indicates that there is contained in the sugar, as met with in commerce, a substance capable of being taken up by a current of air passing over or through it, and possessing the property, while thus suspended or dissolved in the air, of producing fermentation and the growth of mould in fresh wort; this property, however, being destroyed by a temperature of 212° F. The author believes that sugar possesses this property in common with all matter, organic and inorganic, that is not destructive to vitality. The action of cotton is due, therefore, simply to its finely divided condition, and not to any peculiarity in form or composition. The germs floating in the air being deposited or taken up again, precisely as finely-divided dust would be under the same conditions.

It is not probable that the globules found in the washing water are the germs of the plants causing fermentation, etc. It is more likely that they are the partially-developed globules, having a magnitude many times greater than the actual germ that is suspended in the air and distributed through all nature. The cryptogamia found in their full development, and the innumerable globules present, had doubtless been nourished and attained their present size by the volatile matters given off by the fermenting liquids in the beaker glass *i*, and a portion of which must have been absorbed in their passage through the water. The true original germs are without doubt contained in the su-

gar in the filter, but being absolutely without nitrogenous materials for their growth, even when the sugar is in solution, they remain in their pristine state.

ON THE ANÆSTHETIC PRINCIPLE OF THE LYCOPERDON PROTEUS AND CERTAIN OTHER FUNGI.

By THORNTON HERAPATH, Esq.

The smoke of the puff-ball, it is well known, has been long employed in some parts of the country, by apiarists, for stupefying bees. In a paper "On the Anæsthetic Properties of the *Lycoperdon proteus*, or common Puff-ball," which was read before the Medical Society of London in 1853, Mr. R. W. Richardson called particular attention to this fact, and stated that the fumes of the burning fungus produced the most perfect anæsthesia, not only in insects, but also in dogs, cats, rabbits, and probably in all the larger animals, and might consequently be applied as a substitute for the vapor of chloroform and ether in producing insensibility to pain in surgical practice. With the assistance of Dr. Willis, he said, he had removed a large tumor from the abdomen of a dog that had been placed under the influence of the narcotic, without any sign of pain being exhibited by the animal during the operation. From this gentleman's experiments it appeared, that when a moderate quantity of the fumes was inhaled slowly, the narcotism came on and passed off slowly, the animal exhibiting all the symptoms of intoxication, with convulsions and sometimes vomiting; but that when they were administered in larger quantity, life was invariably destroyed. The consideration of these and other facts induced Mr. Richardson to conclude, that the peculiar effects that were produced by the inhalation of the smoke of the puff-ball were caused by a volatile narcotic principle contained in the fungus, which was liberated by the action of heat, but was not absorbable by water, alcohol, or a strong alkaline solution. What the exact nature of this principle was, however, he confessed himself to be unable to determine. About eight or nine months ago I carefully repeated Mr. Richardson's experiments, and after making several futile attempts, at last, I believe, succeeded in isolating the narcotic constituent of the smoke.

The first step I considered it necessary to take in the investigation, was to determine in what part of the fungus the anæsthetic ingredient was contained; that is to say, whether in the sporules, the cellular tissue, or the matters soluble in water. I accordingly digested two or three ounces of the fungus, previously torn up into small pieces, in moderately warm water, and by means of pressure and washing, separated the sporules and soluble constituents from the cellular matter. Then, by allowing the water that had been used in this operation to remain undisturbed for several hours, the sporules were collected in the form of a dark brown-colored, muddy deposit. This was well washed once or twice with water, and dried in an oven, as was also the cellular matter, and the watery solution was evaporated to dryness. On testing these three substances, it was found that only two of them, namely the sporules and the cellular tissue, were capable of producing anæsthesia; the aqueous extract evolved a thick irritating vapor, but this did not occasion insensibility on inhalation.

It was clear, therefore, that the narcotic principle should be looked for in the two former. Accordingly, small portions of each of them were digested for several hours in boiling alcohol, ether, bisulphide of carbon, wood-spirit, diluted sulphuric acid, and fusel oil, but in every instance the residuary matter, when pressed and dried, was found to retain its original narcotic quality. Fresh quantities were then soaked for a considerable period in hot alkaline lye, and in a hot solution of moderately strong nitric acid, until nothing further was dissolved out by either of the reagents; the insoluble portion was well washed with water, and again dried in an oven. On this being tested as before, anæsthesia was found to be no longer produced.

In the next series of experiments I operated in a different way. I introduced the fumes of the burning fungus into bottles containing small quantities of liquor potassæ, dilute hydrochloric acid, alcohol, fusel oil, and diluted sulphuric acid. The bottles were then well shaken for several minutes, and the properties of the purified fumes were tested by introducing flies, bees, or wasps, secured by cement to the ends of long splinters of wood, into the bottles, and observing the effects. In every case, however, insensibility was still produced, thus showing that the narcotic quality of the fumes was not caused by any body soluble in these

solutions. There being no substance with which I am acquainted, except carbonic oxide, nitrous oxide, and perhaps some compounds of cyanogen which possess all these properties; and having, moreover, in the mean time, read a paper, by M. Adrien Chenol, "On Pure Oxide of Carbon, considered as a Poison,"* it immediately occurred to me that it was the former of the substances that was the cause of the narcotism. I therefore specially examined the fumes for carbonic oxide, by agitating them with an acid solution of chloride of copper, and also by absorbing the carbonic acid, ammonia, and oxygen, by means of lime-water, diluted muriatic acid, and a solution of the protosulphate of iron saturated with nitric oxide gas, when indications of the presence of carbonic oxide were readily obtained; the fumes, after agitation with the solution of chloride of copper, no longer induced narcotism; whilst those, on the contrary, which had been treated with the other solvents, were more than ordinarily powerful, and rendered an insect insensible much more quickly than before; they also burnt with a blue flame, and possessed all the well-known characters of the oxide of carbon. The correctness of this conclusion was, moreover, confirmed by experimenting with carbonic oxide prepared by acting on oxalic acid with oil of vitriol, and passing the gas evolved through caustic soda-ley. Even when largely diluted with air, it still continued to produce insensibility in insects, and acted in every way like the purified fumes of the *Lycoperdon*.†

It is not difficult to understand how carbonic oxide is formed by the ignition of the fungus, as this gas is invariably produced in larger or smaller quantity when certain organic substances are decomposed by heat, though some yield it in greater proportion than others; and consequently, as might have been anticipated, I find that the fumes of several other fungi act in the same manner towards animals as those of the *Lycoperdon proteus*. The principal of those to which I allude are the common *Lycoperdon* of the druggist, *L. giganteum*, and the mushroom, *Agaricus campestris*.—*Philosophical Magazine* for July, 1855.

* *Comptes Rendus*, No. 16, April 17, 1854.

† See also 'A Treatise on Poisons,' by Professor Christison, 4th edition, p. 827, for an account of the peculiar effects produced by the inhalation of the oxide of carbon.

Varieties.

On Perfumery. By SEPTIMUS PIESSE.

(Continued from page 374.)

Besides the Sachets mentioned in the "Annals" of last month, there are many other substances applied as dry perfumes, such as scented wadding, used for quilting into all sorts of articles adapted for use in a lady's boudoir. Pincushions, jewel-cases, and the like, are lined with it. Cotton so perfumed, is simply steeped in some strong essence of musk, &c.

The lasting odor of Russia leather is familiar to all and pleasing to many; its perfume is due to the aromatic saunders wood with which it is tanned, and to the empyreumatic oil with which it is curried. The odor of Russia leather, however, is not *recherché* enough to be considered as a perfume; but nevertheless, leather can be impregnated by steeping in the various ottos with any sweet scent, and which it retains to a remarkable degree, especially with otto of santal or lemon grass (*Verbena*). In this manner, the odor of the peau d'Espagne can be greatly varied, and gives great satisfaction, on account of the permanence of its perfume.

PEAU D'ESPAGNE. (*Perfumed Letter Paper.*)

If a piece of peau d'Espagne be placed in contact with paper, the latter absorbs sufficient odor to be considered as "perfumed;" it is obvious that paper for writing upon must not be touched with any of the odorous tinctures or ottos, on account of such matters interfering with the fluidity of the ink; therefore, by the process of infection as it were, alone can writing paper be perfumed to advantage.

PERFUMED BOOK-MARKERS.

We have seen that leather can be impregnated with odoriferous substances, in the manufacture of peau d'Espagne; just so is card-board treated prior to being made up into book-marks. In finishing them for sale, taste alone dictates their design; some are ornamented with beads, others with embroidery.

Cassolettes and Printaniers are little ivory boxes, of various designs, perforated in order to allow the escape of the odors contained therein. The paste used for filling these "ivory palaces whereby we are made glad," is composed of equal parts of grain, musk, ambergris, seeds of the vanilla pod, otto of roses, and orris powder, with enough gum acacia, or gum tragantha to work the whole together into a paste. These things are now principally used for perfuming the pocket or reticule, much in the same way that ornamental silver or gold vinagrettes are used.

PASTILS.

There is no doubt whatever that the origin of the use of pastils, or pastilles, as they are more frequently called from the French, has been derived from the use of incense at the altars of the temples during the religious services:—"According to the custom of the priest's office, his lot (Zacharias's) was to burn incense when he went into the temple of the Lord." (Luke i. 9.) "And thou shalt make an altar to burn incense upon. . . . And Aaron shall burn thereon sweet incense every morning when he dresseth the lamps, and at even when he lighteth the lamps he shall burn incense upon it." (Exodus xxx.)

An analogous practice is in use to the present day in the Roman Catholic churches, but instead of being consumed upon an altar, the incense is burned in a censer, as doubtless many of our readers have seen. As soon as the signal was given by the chief priest, the incense was kindled, the holy place was filled with perfume, and the congregation without joined in prayers."—CARPENTER'S *Temple Service of the Hebrews*.

THE CENSER.

The Censer, as used in the "holy places," is composed either of brass, German silver, or the precious metals; its form somewhat resembles a saucer, and an inverted cup, which latter is perforated, to allow the escape of the perfume. In the outer saucer is placed an inner one of copper, which can be taken out and filled with ignited charcoal. When in use, the ignited carbon is placed in the censer, and is then covered with the incense; the heat rapidly volatilizes it in visible fumes. The effect is assisted by the incense bearer swinging the censer, attached to three long chains, in the air. The manner of swinging the censer varies slightly in the churches in Rome, in France, and in England, some holding it above the head. At the Madeline the method is always to give the censer a full swing at the greatest length of the chains with the right hand, and catch it up short with the left hand.

Several samples of "incense prepared for altar service," as sent out by Mr. Martin, of Liverpool, appear to be nothing more than gum olibanum, of indifferent quality, and not at all like the composition as especially commanded by our Lord, the form for which is given in full in Exodus.

The pastils of the moderns are really but a very slight modification of the incense of the ancients. For many years they were called osselets of Cyprus. In the old books on Pharmacy, a certain mixture of the then known gum resins was called suffitus, which being thrown upon hot ashes produced a vapor which was considered to be salutary in many diseases.

It is under the same impression that pastils are now used, or at least to cover the *mal odeur* of the sick chamber.

There is not much variety in the formula of the pastils that are now in use; we have first the

INDIAN, OR YELLOW PASTILS.

Santal wood, in powder	1 lb.	Otto of santal	} each . . . 3 drachms.
Gum benzoin	1½ lb.	" cassia	
" tolu	½ lb.	" cloves	
Nitrate of potass	1½ lb.	Mucilage of tragacanth .	q. s.

to make the whole into a thick paste.

The benzoin, santal wood, and tolu, are to be powdered and mixed by sifting them, adding the ottos. The nitre being dissolved in the mucilage, is then added. After well beating in a mortar, the pastils are formed in shape with a pastil mould, and gradually dried.

The Chinese josticks are of a similar composition, but contain no tolu. Josticks are burned as incense in the temples of the Buddahs in the Celestial Empire, and to such an extent as to greatly enhance the value of santal wood.

DR. PARIS'S PASTILS.

Benzoin	} of each	½ lb.	Otto of nutmegs	} of each	¼ oz.
Cascarilla			" cloves		
Myrrh		1½ oz.	Nitre		2 oz.
Charcoal		1½ lb.	Mix as in the preceding.		

PERFUMER'S PASTILS.

Well-burned charcoal	1 lb.	Benzoin	¼ lb.
Tolu	} of each	Otto of santal	} of each
Vanilla pods		" neroli	
Cloves		Nitre	1½ oz.
Mucilage of tragacanth,		q. s.	

PIESSE'S PASTILS.

Willow charcoal	½ lb.
Benzoic acid	6 oz.
Otto of thyme	} of each ½ dr.
" caraway	
" rose	
" lavender	
" cloves	
" santal	

Prior to mixing, dissolve ¾ oz. nitre in half a pint of distilled or ordinary rose water; with this solution thoroughly wet the charcoal, and then allow it to dry in a warm place.

When the thus nitrated charcoal is quite dry, pour over it the mixed ottos, and stir in the flowers of benzoin. When well mixed by sifting (the sieve is a better tool for mixing powders than the pestle and mortar), with enough mucilage to bind the whole together, and the less that is used the better.

A great variety of formula have been published for the manufacture of pastils; nine-tenths of them contain some woods or bark, or aromatic seeds. Now when such substances are burned, the chemist knows that if the ligneous fibre contained in them undergoes combustion—the slow combustion—materials are produced which have far from a pleasant odor; in fact, the smell of burning wood predominates over the volatilized aromatic ingredients; it is for this reason alone that charcoal is used in lieu of other sub-

stances. The use of charcoal in a pastil is merely for burning, producing, during its combustion, the heat required to quickly volatilize the perfuming material with which it is surrounded. The product of the combustion of charcoal is inodorous, and therefore does not in any way interfere with the fragrance of the pastil. Such is, however, not the case with any ingredients that may be used that are not in themselves perfectly volatile by the aid of a small increment of heat. If combustion takes place, which is always the case with all the aromatic woods that are introduced into pastils, we have, besides the volatilized otto which the wood contains, all the compounds naturally produced by the slow burning of ligneous matter, spoiling the true odor of the other ingredients volatilized.

There are, it is true, certain kinds of fumigation adopted occasionally, where these products are the materials sought. By such fumigation, as when brown paper is allowed to smoulder (undergo slow combustion) in a room for the purpose of covering bad smells. By the quick combustion of tobacco, that is, combustion with flame, there is no odor developed; but by its slow combustion, according to the method adopted by those who indulge in "the weed," the familiar aroma, "the cloud," is generated, and did not exist ready formed in the tobacco. Now, a well-made pastil should not develop any odor of its own, but simply volatilize that fragrant matter, whatever it be, used in its manufacture. We think that the fourth formula given above carries out that object.

It does not follow that the formulæ that are here given produce at all times the odor that is most approved; it is evident that in pastils, as with other perfumes, a great deal depends upon taste. Many persons very much object to the aroma of benzoin, while they greatly admire the fumes of cascarilla.

THE PERFUME LAMP.

Shortly after the discovery of the peculiar property of spongy-platinum, remaining incandescent in the vapor of alcohol, the late Mr. J. Deck, of Cambridge, made a very ingenious application of it for the purpose of perfuming apartments. An ordinary spirit lamp was filled with eau de Cologne, and "trimmed" with a wick in the usual manner. Over the centre of the wick, and standing about the eighth of an inch above it, a small ball of spongy platinum is placed, maintained in its position by being fixed to a thin glass rod, which is inserted into the wick. Thus arranged, the lamp is to be lighted and allowed to burn until the platinum becomes red hot; the flame may then be blown out, nevertheless the platinum remains incandescent for an indefinite period. The proximity of a red-hot ball to a material of the physical quality of eau de Cologne, diffused over a surface of cotton wick, as a matter of course causes its rapid evaporation, and as a consequence, the diffusion of odor.

Instead of the lamp being charged with eau de Cologne, we may use eau de Portugal, vervaine, or any other spirituous essence thought fit. Se-

veral perfumers make a particular mixture for this purpose, which is called—

EAU A BRULER.

Eau de Cologne	1 pint.	Otto of thyme	} of each $\frac{1}{2}$ drachm.
Tincture of benzoin	2 oz.	“ mint	
“ vanilla	1 oz.	“ nutmeg	

Another form called

EAU POUR BRULER.

Rectified spirit	1 pint.	Otto of thyme	} of each 1 drachm.
Benzoic acid	$\frac{1}{2}$ oz.	“ caraway	
Otto of bergamot	2 oz.		

Persons who are in the habit of using the perfume lamps will, however, frequently observe that whatever difference there may be in the composition of the fluid introduced into a lamp, that there is a degree of similarity in the odor of the result when the platinum is in action. This arises from the fact, that so long as there is the vapor of alcohol, mixed with oxygen air, passing over red hot platinum, certain definite products always result, namely, acetic acid, aldehyde, and acetal, which are formed more or less, and impart a peculiar and rather agreeable fragrance to the vapor, but which overpowers any other odor that is present.

FUMIGATING PAPER.

There are two modes of preparing this article:—1. Take sheets of light cartridge paper and dip them into a solution of alum—say, alum, one ounce; water, one pint. After they are thoroughly moistened, let them be well dried; upon one side of this paper spread a mixture of equal parts of gum benzoin, olibanum, and either balm of tolu or Peruvian balsam, or the benzoin may be used alone. To spread the gum, &c., it is necessary that they be melted in an earthenware vessel, and poured thinly over the paper, finally smoothing the surface with a hot spatula. When required for use, slips of this paper are held over a candle or lamp, in order to evaporate the odorous matter but not to ignite it. The alum in the paper prevents it to a certain extent from burning. 2. Sheets of good light paper are to be steeped in a solution of saltpetre, in the proportions of two ounces of the salt to one pint of water, to be afterwards thoroughly dried.

Any of the odoriferous gums, as myrrh, olibanum, benzoin, &c., are to be dissolved to saturation in rectified spirit, and with a brush spread upon one side of the paper, which being hung up, rapidly dried.

Slips of this paper are to be rolled up as spills, to be ignited and then to be blown out.

The nitre in the paper causes a continuance of slow combustion, diffusing during that time the agreeable perfume of the odoriferous gums. If two of these sheets of paper be pressed together before the surface is dry, they will join and become as one. When cut into slips they form what are called “odoriferous lighters.”—*Annals of Pharmacy*.

Pharmaceutical Studies in Austria.—Pharmaceutical instruction is about being re-organized in Austria. Before commencing his pharmaceutical studies the student has to be qualified in the instructions of the schools (Gymnases.) The duration of the course of studies is two years. The teaching of the first year comprehends experimental physics, mineralogy, zoology, and botany; that of the second, inorganic and organic chemistry, analytical chemistry, pharmaceutical chemistry, and pharmacognosy. The tests or examinations are three in number, two theoretical and the other practical. The first is on physics, botany, mineralogy and zoology. The practical examination consists in the preparation of two pharmaceutical products, and a chemical analysis, qualitative and quantitative, the candidate making a written report of the processes he has followed, and the results he has obtained. The second theoretical examination relates to pharmacognosy, organic and inorganic chemistry, analytical and pharmaceutical chemistry, and the police of pharmacy. Two years' practice in the shop is required.—*Repertoire de Pharm.*, Juin, 1855.

Danger of Keeping Tobacco in Leaden Boxes.—It is stated in the *Annales d'Hygiene* that humid tobacco will oxidize lead, and afterwards form salts with the oxide, which, on examination, are found to be a mixture of acetate, carbonate, chlorhydrate, and sulphate of lead, of which the quantity amounts to from 6 to 30 grains for a half pound of tobacco. The presence of soluble lead salts may be discovered in bad tobacco by incinerating it, treating the ashes with nitric acid, and testing the liquid for lead by the usual tests.

Falsification of Volatile Oil of Anise with Spermaceti. By M. F. CAPDEVILLE.—Having occasion to make an aromatic tincture, I took 2 grammes of oil of aniseed and threw it into 250 grammes of alcohol. Greatly to my astonishment, an instantaneous precipitation of whitish flocks occurred, from which I concluded the oil to be adulterated.

Desirous of knowing the nature of this precipitate, I collected it, ascertained its weight to be .70 grammes, put it in a porcelain capsule, and treated it with distilled water, which was without action on it. I then decanted this liquid and applied boiling alcohol, which dissolved it completely, but allowed it to precipitate on cooling, in the form of a beautiful white solid, soft to the touch, and having all the physical characters of spermaceti. New experiments confirmed its identity with that substance, and decided its proportion to be about 35 per cent.—*Repert. de Pharm.*

On the Essence of Peppermint. By ORTLIEB.—The April number of the *Repertoire de Pharm.* contains an article on the production of essence of mint; I believe it right to give a short account of my manner of operating in the production of this volatile oil.

A little before the mint is in full inflorescence, I cut up small and dry it in the shade until reduced to three fourths of its weight. In this state I submit it to distillation in a still, in such a manner that the aqueous vapor shall traverse the plant, supported on a diaphragm, and rapidly remove the volatile oil. The process is continued as long as the distilled water is odorous, and the latter is employed for a new operation. Thus obtained the oil is greenish colored, but may be obtained colorless by careful rectification, in a glass retort with a refrigerated receiver. The product amounts to from 0.6 to 0.8 per cent.—*Repert. de Pharm., Juin, 1855.*

Phosphorus Paste for Destroying Vermin.—The preparation and preservation of this paste, which is generally preferred to arsenical preparations, presents two serious inconveniences: the facility with which the phosphorus inflames in boiling water, and the prompt fermentation of the paste when kept. These may be avoided by employing the following formula, viz: Triturate to liquefaction six parts of phosphorus and one part of pure sulphur, with six parts of cold water, that is, added in portions; afterwards mix in two parts of flour of mustard, ten parts of cold water, eight parts of of sugar, and twelve parts of rye flour. Stir it to the consistence of a soft paste, and keep it in pots closely stopped.—*Neues Jahrb. für Pharm. and Repert. de Pharm.*

Florida Indigo.—Indigo was formerly cultivated in Florida, for which the climate and soil is well adapted. It grows wild upon the barrens in almost every portion of the Peninsula. When cultivated by the English in this country, the Indigo of Florida was considered in the London market superior to all others, except that of Caraccas. The manner of cultivation and manufacturing advantageously is as follows:

The seed, which is very small, is soaked for some twelve hours, then mixed with ashes or sand, and sown in drill rows, about eighteen inches apart. The time for sowing in Florida is from the middle of March to the first of April. When the young plant makes its appearance, it resembles white clover, and must be carefully weeded, and the earth kept loosed about its roots. Three weedings are sufficient to carry it up to the first cutting, which commences when the plant begins to bloom, say about the first of July. The plant is so easily injured by the sun after it is plucked, that the cuttings should be in the afternoon. As fast as it is cut, which is done by a sickle, it is carried to a vat called the steeper. This vat is made of plank, is water-tight, and varies in size according to the extent of the operations of the planter. The steeper is filled with cuttings immersed in water. Planks, with weights upon them, are then placed on top to keep the cuttings beneath the water. In this state steeping is continued for about ten hours, or less, according to the temperature of the water. When the water assumes an olive color, it is drawn into the "beater," another

vat, placed alongside and beneath the steeper, and connected by a tube, and fastened with a valve or spigot. The liquid is now churned, by hand or with machinery, until it becomes lighter in color, and a blue fecula begins to make its appearance. From time to time lime water is thrown into the beater during the "churning." After the fecula spoken of distinctly appears, the water is suffered to remain about four hours for the Indigo to settle. It is then drawn off, the sediment placed in bags, and hung up to drain. When drained sufficiently, it is placed in boxes to dry, under gentle pressure; and when dried firm, it is cut up into square cakes and placed in the shade, to become completely dried by evaporation. The shorter the steeping and the less the beating, the lighter will be the color of the Indigo. The Indigo plant will yield two or three cuttings a season, and one hand will cultivate about three acres, the result being from 175 to 200 lbs. of the article. Unlike sugar cane or corn, the Indigo requires no expensive machinery. Where it is made only for domestic use, barrels are used for steeping and beating.—*Florida News*.

On Lemon Juice. By DR. BENCK JONES.—Experiments on fresh lemon juice, by Mr. Whytt, of the College of Chemistry, furnished the following results. It had specific gravity 1036.0, 1037.9, and 1038.4; and in two specimens each ounce of juice contained about 28.1 to 27.5 grains of pure anhydrous citric acid, and when burnt yielded only 1.74 grains of ash = 3.60 grains of ash in 1000 grains of juice. The ash contained—

	In 1000 parts.	In 1 oz. of lemon juice.
Potash	443.4	= .767
Soda	21.6	= .038
Lime	76.1	= .131
Magnesia	33.4	= .058
Sulphuric acid	124.7	= .215
Chlorine	12.3	= .022
Carbonic acid	196.6	= .339
Phosphoric acid	75.6	= .130
Phosphate of iron,	10.6	= .018
Silica	5.7	= .010
	1000.0	1.724

London Med. Times and Gaz.

On two New Tannifuge Medicines imported from Abyssinia—the Saoria and the Tatzé.—The *Saoria (sauarja)* is the ripe and dried fruit of the *maesa (bacobotrys) picta* (Hachsetter). According to M. Schimper, it is found throughout Abyssinia, at the height of 7000 to 9000 feet, never below 6000 feet. The fruit is an ovoid drupe, covered over two-thirds of its apex by the calyx, and of a greenish yellow color. The seeds are turbinate, angular, flattened at the apex, and covered by a resinous substance in ellipsoid

grains. The long diameter of the fruit is from three to four millimetres, the short diameter a little less; it is then about the size of pepper. The taste is at first somewhat aromatic, oily and astringent, and leaves for some time afterwards a tolerably persistent acid sensation in the pharynx. M. Schimper states that the dried fruit is administered in powder, in doses of 32 to 44 grammes; that it purges, and kills and expels the worm entire, without affecting the health of the patient.

The *tatzé* is the fruit of the *Myrsina Africana*, a native of Abyssinia, the Cape of Good Hope, the Azores, and Algeria. It is a more disagreeable remedy than the saoria; and in six cases in which it was administered, the patients did not complain of any colicky symptoms being induced, and its purgative operation is not constant. It imparts an inky tinge to the urine. It is said to be tænicide. It succeeded in expelling the tænia in each of the six cases in which it was given, and in one of these, several other active vermifuges had failed. The medium dose of the powder of *tatzé* is fifteen grammes, followed, if necessary, by a dose of castor oil.—*Brit. and Foreign Med. Chur. Review, from Bull. Gén. Thérap, July, 1854.*

Description of a New Gas Furnace. By PETER HART, Manchester.—The apparatus I am about to describe was devised by me to answer the purpose of a Russian spirit furnace, at the same time employing gas as fuel. Its leading feature, and the one in which I think it differs from most other gas furnaces consists in the substitution of a jet of steam for one of compressed air. With this apparatus I can get a platinum crucible to a white-red heat in a few seconds, which is more than sufficient for all ordinary ignitions, fusions, and other analytical operations. When once set to work and properly regulated, it may be left to itself for a considerable time, thus sparing the operator the annoyance of standing by and working the blowing apparatus for half an hour: no bellows, or other such instrument is required to work it; and lastly, it is so simple and inexpensive that any tin-worker would, I think, be able to make one in at least a couple of hours.

My apparatus consists of a copper basin, about five inches in diameter; the edges are soldered down to a circular copper plate, in the centre of which a small hole is drilled; into this (to serve for a jet) is soldered one of the small copper tubes cut from a Leslie's patent gas burner; this jet is inserted into what in gas-fitters' parlance is termed an elbow-joint, standing exactly in the centre of the upright tube; this elbow-joint has screwed into it a short piece of ordinary gas-tubing; when this, together with a short tube for the purpose of admitting water, is soldered on, the apparatus is complete. To set it to work, fill the vessel half full of water, and set it in the ring of a retort-stand over a gas flame, having first inserted a good cork into the short tube; then connect by means of a length of india-rubber tubing with a supply of coal-gas; when the water boils, turn on the gas,

and light it; the steam rushing through the jet will produce with the flame an extremely hot brush of blue flame, exactly like the flame of a spirit furnace; if the pressure is allowed to get too high, the flame will be blown out; of course the steam is regulated by increasing or diminishing the flame under the apparatus. A very few trials will enable the operator to discover the proportion of steam and gas which gives the most intense heat. Each time before using, the jet should have a pin inserted into it, to see that it is not choked up, as when that happens to be the case, a very few moments suffice to get the steam sufficiently high to violently eject the cork, together with the whole of the water contained in the apparatus. In working with this as with a spirit furnace, it is advisable to stand on the other side to that towards which the cork is likely to be driven.

Chem. Gaz., May 1, 1855.

NOTICE.

TO THE PHARMACEUTISTS AND DRUGGISTS OF THE UNITED STATES.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The 3rd Section, First Article, of the Constitution requires the President, at least three months previous to the annual meeting, to publish a call, in all the Pharmaceutical, and in such other Medical Journals as he may select, stating therein the objects of the Association and the conditions of the Membership. In compliance with this duty, you are hereby notified, that the next annual meeting of the Association will be held in the City of New York, on the second Tuesday (11th) of September, 1855, at 3 o'clock, P.M.*

The objects of the Association are, to deliberate on the condition of our profession, the advancement of Pharmaceutical knowledge, and the elevation of the professional character of Apothecaries and Druggists throughout the United States.

CONDITION OF MEMBERSHIP.

Section II.—ARTICLE I. All pharmacutists and druggists who shall have attained the age of twenty one years, whose character, morally and professionally, is fair, and who, after duly considering the obligations of the Constitution and Code of Ethics of this Association, are willing to subscribe to them, shall be eligible for membership.

ARTICLE II. The members shall consist of delegates from regularly constituted Colleges of Pharmacy and Pharmaceutical Societies, who shall present properly authorized credentials, and of other reputable Pharmaceu-

[*Mr. John Meakim, one of the Vice-Presidents of the Association, informs us that the meeting will be held at the rooms of the College of Pharmacy, in the HALL OF THE NEW YORK MEDICAL COLLEGE, on Thirteenth street, between Third and Fourth Avenues.—EDITOR.]

tists feeling an interest in the objects of the Association, who may not be so delegated, the latter being required to present a certificate signed by a majority of the delegates from the places whence they come. If no such delegates are present at the Association, they may, on obtaining the certificates of any three members of the Association, be admitted, provided they be introduced by the Committee on Credentials.

ARTICLE IV. Every member shall pay into the hands of the Treasurer the sum of two dollars as his yearly contribution.

ARTICLE V. Every local Pharmaceutical Association shall be entitled to five delegates.

W. B. CHAPMAN, President.

Cincinnati, April 11, 1855.

Editorial Department.

THE FLUID EXTRACTS OF TILDEN & Co.—In our last number we acknowledged the reception of twenty-one specimens of Tilden & Co.'s fluid extracts, then too late for notice. Since that time, two months, they have been kept in a closet at the temperature of the store with the mercury varying from 70° to 94°, with no means taken to prevent its influence. These preparations are said to be made according to the Pharmacopœia, when officinal, and in several instances according to formulæ published in this journal when not recognized by authority, whilst some are made by the judgment of the manufacturers, always, in such cases, being of the strength of 1 oz. to ℥i. They are put up in panelled bottles, holding about four fluid ounces labelled and wrapped.

Belladonna, Hyoscyamus and Lobelia. These fluid extracts may be noticed together. They are, when shaken, dark green fluids, owing to the chlorophyll they contain, the two first appearing evidently to be made from the recent plant. The *Belladonna* and *Hyoscyamus* smell strongly of the recent plants when bruised, and have their peculiar taste well developed. Although made from the green plants, the proportion is a fluid ounce to an ounce of the dried plant, which is ascertained by drying a small quantity of the herb and ascertaining its loss, and then using a corresponding quantity of the recent plants. Being concentrated in vacuo and preserved with a little alcohol, these fluid extracts appear to be fully charged with the sensible and medicinal properties of these drugs.

Rhubarb, Senna, Rhubarb and Senna, Senna and Tarazacum, Senna and Spigelia, and Buckthorn.—These appear to be well made. The *Rhubarb*, while it has the proper odor and taste, is rather more fluid than it usually appears. So much depends on the choice of the root that it is a difficult matter, obscured as the taste is with aromatics, to judge with cer-

tainty. The Senna is excellent, and is 'all the better for being made in vacuo—as are the compound extracts containing it, *Spigelia*, *Taraxacum*, and *Rhubarb*. They are all preserved with sugar and have a syrupy consistence. The fluid extract of *Buckthorn* is made from the nearly ripe berries, and presents the form of a dense reddish-brown syrup, from which a portion of the sugar has crystallized, owing, probably, to the alcohol added to keep it. Its activity is such that a tea-spoonful is given as a dose.

Serpentaria, *Chamomile*, and *Gentian*.—There are two formulæ for fluid extract of *Serpentaria*—that of Alfred B. Taylor, made with diluted alcohol, of the strength $\frac{3i}{f3i}$, and that of John C. Savory, preserved with sugar, and of the strength $\frac{3ss}{f3i}$. The latter appears to be that followed by Mr. Tilden. The fluid extract, however, does not possess the decided bitterness and camphorous pungency that it should, nor is its aroma as well marked as it should be. The *Chamomile* represents only the bitter extractive, as none of the aroma of the flowers is perceptible. Although difficult to retain, when water is the menstruum, a preliminary tincture with alcohol, to be evaporated afterwards spontaneously and added to the concentrated infusion, would ensure the presence of the volatile portion to a considerable extent. The *Gentian* is well prepared.

Cinicifuga, *Scutellaria*, *Buchu*, and *Uva Ursi* well represent the respective drugs. The *Scutellaria* has recently been tried by Dr. Bates with marked success in nervous diseases. The aroma of the *Buchu* speaks for itself.

Sarsaparilla, *Compound Sarsaparilla*, *Stillingia*, *Rumicis Crispus*, and *Taraxacum*. The fluid extract of *Sarsaparilla* is not the official preparation, nor is the compound extract made by that recipe, but contains conium—the simple extract is probably made from American *Sarsaparilla* (*Aralia nudicaulis*), as neither its odor or taste are those of the *Smilax*. The *Stillingia* and *Yellow Dock* are indigenous medicines, gaining favor with the profession; in this form they will be found very convenient. Lastly, the *Taraxacum* was examined and found to be a saccharine liquid having the odor and taste of the root, but not manifest to the same degree as in the spirituous fluid extract, or the prepared juice.

Having thus hurriedly passed the several preparations of the Messrs. Tilden in review, it seems right in the connection to make a few remarks on this new branch of the enterprise of these gentlemen. With their gardens and apparatus described before (see vol. xxiii., page 386) they have great advantages for the preparation of the fluid extracts of indigenous plants; and for the same reason, with choice drugs, they may equally well prepare fluid extracts from them. There are some cases, however, where the apothecary should always prepare them himself, because so much depends on their uniformity that he is not justified in relying upon a commercial article of which he cannot be assured of the age and condition. On the other hand, there are many which those gentlemen may produce

with great advantage, especially to country practitioners, who often need concentrated medicines in their rural pharmacy. Necessarily more prone to decomposition than solid extracts, it is an important point to render them as permanent as possible, and to this end the propriety of an alcoholic menstruum is sometimes undoubted, even where its solvent power is not called into play.

AMERICAN PHARMACEUTICAL ASSOCIATION.—The period is rapidly approaching when the Association will hold its Annual Meeting for 1855, in New York. We have stated in a note to the announcement of the meeting on a preceding page, that the rooms of the New York College of Pharmacy, in the Hall of the New York Medical College on Thirteenth Street between Third and Fourth Avenues, have been fixed upon by the Committee of Arrangement of that Institution. This locality, though comparatively central on the city plot, is considerably north of the business centre, which may now be placed at the Park or City Hall. For the information of those who are not familiar with New York localities, it may be useful to state that the Third and Fourth Avenue cars leave the south end of the Park on the Chatham Street side, at short intervals, and cross Thirteenth Street within a square of the place of meeting. This will enable members stopping at hotels in the business district to go and return with the least inconvenience. Omnibuses are also constantly passing along Broadway within a short distance of the Hall.

As the modification of the Constitution will probably be an important feature in the discussions, members proposing to be in attendance would do well to give some consideration to that document as it at present stands. Another point of general interest is the Report on a certificate of membership. Besides the Reports of Committees, it is probable that many subjects of local and general interest will be brought forward, and among these we hope to find those of a scientific character, practical and theoretical, of which not a few deeply interest our profession.

It is probable that many pharmacutists may be attracted to the meeting at New York, in part, by the opportunity it will afford them of making important business transactions in that great commercial metropolis; and we hope our New York friends will suggest to those who may be there without reference to the meeting, that they attend its sittings.

SULPHATE OF QUINIA.—Our readers will perceive that Dr. Squibb has again given his experimental attention to the Sulphate of Quinia of Messrs. Powers & Weightman. The position he now takes is somewhat different from that in his first communication, in July; whilst the manufacturers, after a fuller investigation than they had previously had time to give the matter, corroborate their previous statements and question the results of Dr. Squibb. The chief point at issue is, does disulphate of quinia, when dried at a temperature of 240° F. till it ceases to lose weight, retain two equiva-

lents of its water of crystallization? Dr. Squibb's averments are based on the assumption that it does. Mr. Weightman's results convince him that it does not. Again; Dr. Squibb, in asserting that other impurities exist, does not appear to have duly considered the alterations incident to the action of heat and air on the alkaloid base of the salt, during the desiccating and evaporating processes to which it was subjected in his experiments—influences well known to act on almost all forms of organic matter, as suggested by Mr. Weightman. When the subject was first brought forward by Dr. Squibb, we looked upon it in the light of a new fact, previously overlooked, that this salt might crystallize with more than the eight equivalents of water, as usually stated by chemical writers, and that it should be known, else we should have recommended that justice to the uniformly good quality of their chemicals should have claimed for the manufacturers a private hearing, at least until the reality of their shortcoming should have been unequivocally demonstrated by a series of parallel examinations made with the commercial sulphate of quinia of other manufacturers, foreign and domestic. Until this is done by Dr. Squibb or a disinterested third party, we claim the privilege of arresting a judgment which, however well intentioned by Dr. Squibb, is calculated to injure the deservedly excellent reputation of the manufacturers.

NEW YORK COLLEGE OF PHARMACY. PRESCRIPTIONS.—The New York College of Pharmacy, in July last, issued a circular letter to the physicians of that city in reference to the want of uniformity in the language and construction of prescriptions as a fruitful source of errors in compounding them. Looseness in this important office of the physician has perceptibly diminished in this city since the joint action of the County Medical Society and the College of Pharmacy, yet there is room for much improvement at the present time, not only in the mechanical execution but in attention to the officinal nomenclature. Habit is as powerful an auxiliary in well-doing as in ill-doing, and much would eventually be gained if medical preceptors and teachers would insist on the importance of correct and neat prescriptions in their instruction to their students.

PHILADELPHIA COLLEGE OF PHARMACY.—The School of Pharmacy in this Institution will be opened by a general introductory, on the second of October. A programme of the courses will be found in our advertising columns, together with an extract from the By-laws in reference to the qualifications required of candidates for graduation.